

# THE IRON AGE

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## Molding Automobile Engine Cylinders.

### The Process Followed in the Manufacturers' Foundry at Waterbury, Conn.

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The automobile has undoubtedly done more than anything else to develop the highest skill and accuracy in foundry practice. The Manufacturers' Foundry Company, early to appreciate and foresee the extreme popularity the automobile was destined to enjoy, designed, built and equipped a foundry especially for the manufacture of automobile castings. In this article it is aimed to give a detailed account of the method used in

all needed instructions relating to the materials to be used in constructing pattern and core boxes. If large quantities are required these are made of well seasoned mahogany, with all surfaces of core boxes, most exposed to wear, protected by brass binding and all pins and dowels made of brass, of ample size to insure perfect location and permanency. The pattern and core boxes being received from the shop are carefully checked before being put in the sand, care being taken to see that all loose pieces are so made and marked that they cannot be mislocated.

The pattern is next sent to the flask shop to have the flask fitted ready for the molder. If a large number of castings are required special iron flasks are made ready while the drawings are in the hands of the pattern maker; otherwise neat wooden flasks are used. Meanwhile

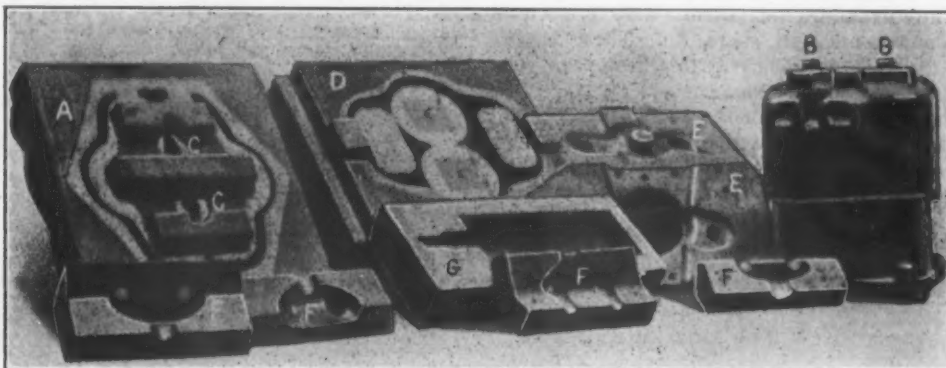


Fig. 1.—The Core Boxes and the Pattern at the Extreme Right.

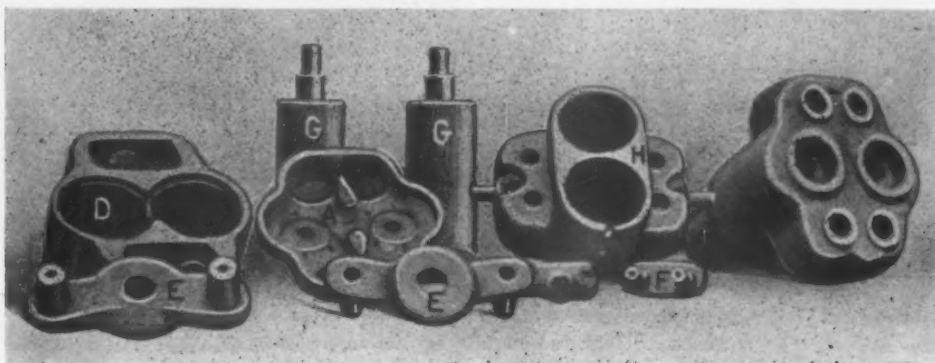


Fig. 2.—The Cores and the Finished Casting at the Extreme Right.

making one of the many types of cylinders produced in this foundry, selecting for the purpose the "Royal," a twin type water jacketed gasoline engine cylinder of 40 to 50 h.p.

The drawings, as they leave the hands of the designer, are first carefully examined to eliminate any features which experience has shown are likely to cause weakness in the casting from sponginess, internal strains, cracks, &c., produced by unequal thickness in the walls of the casting and consequent contraction due to unequal cooling. The next point to be considered is the size and location of the core supports, which must be large enough to accurately locate and support the different cores in the mold, and to allow free and rapid escape of the gases and removal of wires and burnt sand from the cores. In placing these supports it is endeavored to avoid uneven parting lines, which are so likely to make ugly seams on the casting and add greatly to the time required to make the mold. These points having been investigated, the necessary additions to the drawing are made and it is sent to the pattern shop with

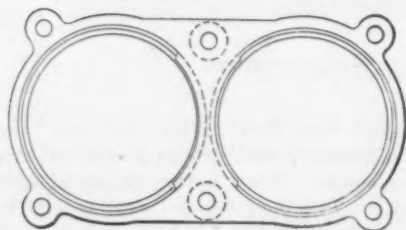
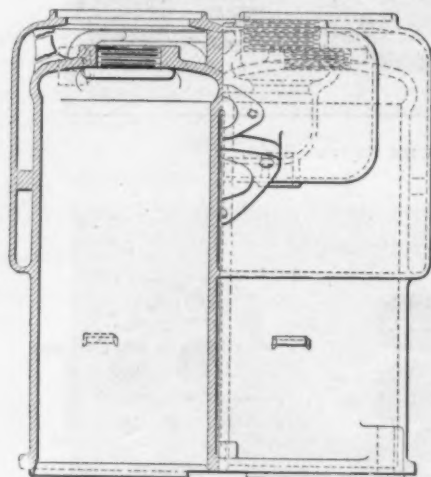
the coremaker has been given the core boxes and necessary instructions and proceeds to bend wires to fit the various boxes. These wires are in bunches of 10 lb. each, cut in yard lengths, and are kept on wall pegs in front of and within easy reach of each workman, who is supplied with cutters and pliers for handling the wire. In many cases the wires are made to assume very odd shapes as they follow the contour of the box, for by them every part of the core must be firmly supported so as to stand the pressure exerted by the molten iron. The removal of these wires plays an important part also in getting the core out of the casting, as the burnt sand becomes loosened and readily flows from the hole left by the wires.

#### Making the Cores.

In Fig. 1 are shown the core boxes and pattern and in Fig. 2 the cores, lettered to correspond with the letters on the boxes in Fig. 1. Starting with the box A, Fig. 1, containing the top jacket core, which forms the water space on the head of the cylinder and is recessed to leave metal over the ports on the inside, a mixture of

fine open grained bank sand and oil of a well tried formula is tuck into the box and so shaped as to fill one half of the core space. Next the wires, previously formed, are carefully placed and securely tucked to avoid springing; then the vents are placed. These are formed by wax yarn made on the premises from a composition, the base of which is pure beeswax. This yarn is made in sizes varying from 1-16 to  $\frac{1}{4}$  in. in diameter and run into skeins about 100 ft. long. The vents are so laid as to form a network all through the core, their ends terminating in prints marked B and B on the pattern, these being the only support and vent outlets on this core. Looped wires or hangers are fixed at C and C, allowing the core to be firmly tied to the bottom jacket, part of the vent of which is carried through the top core into the prints at this point. The remainder of the core space is then firmly rammed, all loose parts of the box being held in position, the joints are struck off level, such loose parts as may be are removed and all soft spots are made right. Driers or forms are placed in position to support the hanging sand while it is green and the core plate is rubbed to position. The whole is then turned over, the box lightly jarred with a rawhide mallet, all hooks, &c., loosened, the box withdrawn and the core carefully examined for possible defects, such as exposed wire and vents, soft spots, &c. These having been dressed the core is removed to the oven. The finished core is shown at A in Fig. 2.

The coremaker proceeds with the box D, Fig. 1, containing the bottom jacket, which consists of the main box and loose pieces which form the outer wall of the cylinder barrel, the inlet and exhaust passages and the two core prints or supports. These being the only direct



connected supports they must be strongly wired to stand the lifting pressure of the iron when the mold is cast. This core is made in substantially the same way as that for A, all wires being led so as to facilitate their removal as well as to strengthen the core. Vents are led to the prints and also to the thick part of the core, and holes  $\frac{1}{4}$  in. in diameter are made at this point to connect with the hangers in core A, so that both cores can be tied together. The core having been rammed all loose pieces are drawn and supporting forms put in their place, the plate rubbed on, the whole rolled over, the box drawn, and the core dressed and carried to the oven. D in Fig. 2 shows this core completed.

Two port cores, E and E, are next made, being well wired, and all vents are led to prints which are also

strongly wired, as they must support the weight of the barrel cores in the mold. The inlet and exhaust cores, F and F, come next, all wires and vents being led through prints which lock into the port cores at the vent passing down through the port prints. Last come the barrel cores, G and G. These, being much larger, are made of a more open sand of weaker mixture, with a strong rod and large free vent leading to the larger end.

All cores being put into the ovens are kept over night at what has proved to be the proper heat for cores of this class, the temperature being regulated with reference to a recording pyrometer. In the morning the cores are removed from the oven to the bench and all forms are removed, the rough edges dressed and a careful

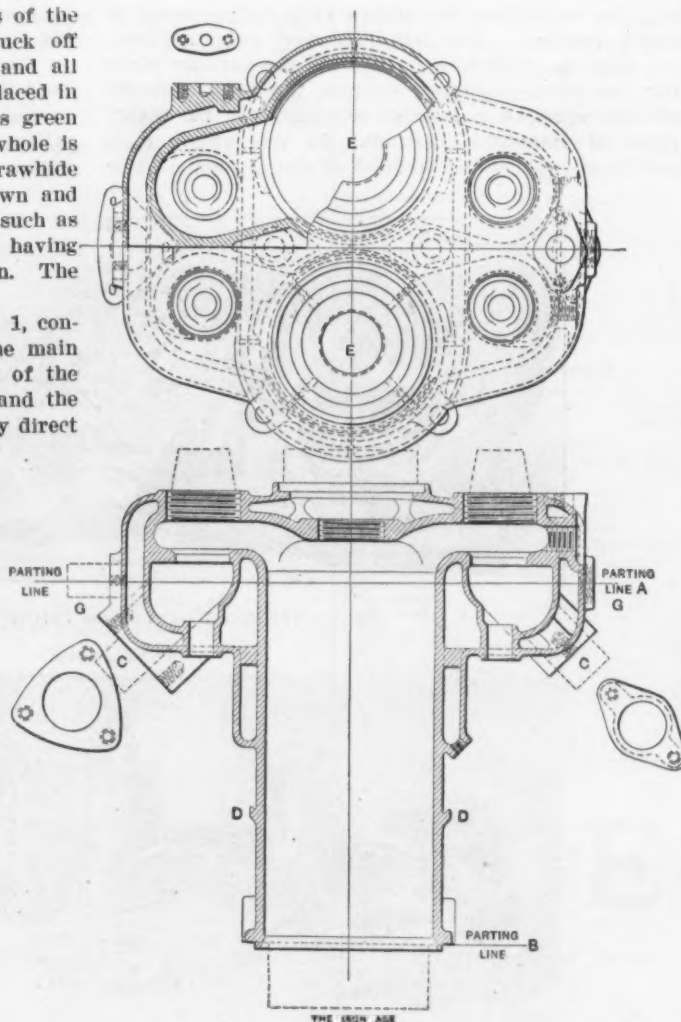


Fig. 3.—Various Views of the Casting with the Positions of the Core Prints Indicated.

search made for any exposed vents, as at times the wax is displaced by the ramming and forced against the side of box. During the baking the wax is melted and absorbed by the sand, leaving a clear hole in its place. These vents, if displaced, are opened as far as they lie near the surface, and yarn of a smaller diameter is inserted and the cut filled with new sand and dried, melting the wax and finally leaving a perfect vent hole. All cores are now given a coat of blacking by dipping them in a tub, the contents of which are constantly stirred to maintain the proper consistency. After a short period in the oven they are again taken to the bench, thoroughly dried and are ready to be fitted and assembled. First, both jackets, A and D, are put together and calpered to size (a variation of 1-16 of an inch in so thin a casting being prohibited); the jackets are now separated and the port cores E, fitted into the top jacket, the inlet and exhaust cores F are fitted into the ports and the bottom jacket is again put on to see that all parts line up and give the necessary thickness of metal. If correct, all parts are again separated and paste applied to the joints,



wires inserted in hangers at C and C, all parts assembled and tightly pressed together, wires tied fastening the top and bottom jacket, all joints filled with slurry and the finished core H, Fig. 2, placed in the oven to dry the paste. When dry it is removed to a storage rack until needed by the molder. The barrels are then pasted after being calipered to size and dried, and are placed on the rack. This completes the coremaker's part of the making of the cylinder.

#### Making the Mold.

The "Royal" twin cylinder when cast is 17 in. high and  $12\frac{1}{2} \times 14$  in. in greatest dimensions at the head or dome,  $\frac{1}{8}$  in. thick on the water jacket and  $\frac{3}{8}$  in. thick on the barrels, and is shown in Fig. 3. The pattern is parted on the dome at the center of the core prints and also at the junction of the base and barrels, with loose bosses, four at D D and two at C C for inlet and exhaust pipes, to be drawn in after removing the main body of the pattern. These bosses are dovetailed into the pattern, doing away with the use of loose pins or dowels, which are likely to be lost and replaced by a nail or some other handy thing that might allow them to shift. Two core prints, E E, support the top jacket core. Four ad-

sand put on. The second cheek, which has a row of spikes driven into the sides 1 in. from the bottom, is now put on top of the first and a dry sand core having cast iron chills on the bottom edge is placed between the barrels, as this point is too delicate to be trusted to green sand. The chills are designed to quickly cool the iron, which at this point, the junction of the jacket and barrel, if left to cool in the natural way is apt to be spongy and produce a defective spot in the bore that would render the casting useless, as the usual expansion of the cylinder while in use would allow the water to leak from the jacket into the bore.

Facing sand is again sifted over the pattern and firmly tucked up to the base of the chill core. Vent rods are then inserted through holes in the side of the flask into vent holes in the chill core and heap sand is shoveled in and rammed to the top. Next the gate patterns, four in number, are bedded in and the joint made, the top of the dome pattern is put on, likewise the cope, the gate pins are set in place, the patterns covered with facing sand and iron bearings, to support the core prints when rolled over, are put on each of the side core prints. A lifting screw is then put in to raise the pattern when the cope is lifted off, the whole is filled with

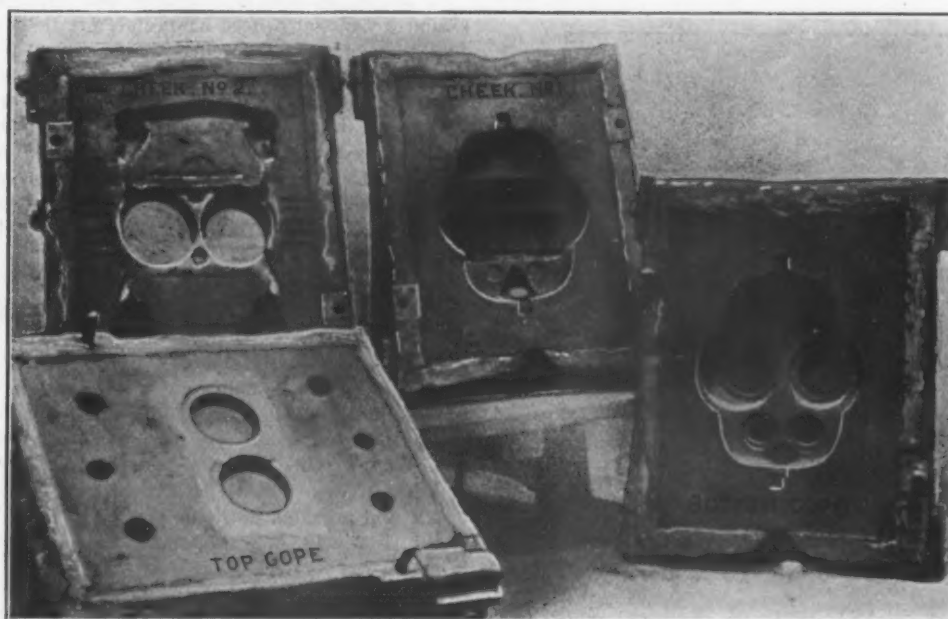


Fig. 4.—The Parts of the Mold Exclusive of Cores.

jacent core prints support the two port cores, which in turn lock into and support the barrel cores at the bottom. Prints G G support the bottom jacket and liberal provision is made for leading the core vents from each, as will be shown later.

As these cylinders are cast in green sand the flasks, which are 18 x 24 in. inside, are of wood and strongly made. Fig. 4 shows these parts. They include two copes 6 in. deep, each having two bars conforming to the shape of the pattern to support the sand, and two cheeks of same depth with supporting strips around the bottom to keep the sand in while turning over and closing the flask, as the mold is rammed dome side up and reversed for coring and casting.

The mold board is laid on a level bed of sand and the lower cheek placed on it. The corresponding part of the pattern is then properly located in the flask and facing sand, composed of one part of bolted sea coal to nine parts of fine new sand and three parts of heap sand, well mixed and properly tempered, is then sifted on through a No. 8 sieve and firmly tucked around the pattern. Two  $\frac{3}{4}$ -in. round iron rods are inserted through holes in the side of the flask and pushed through corresponding holes on the opposite side. These rods serve to support the sand under the dome when the mold is closed. The cheek is then filled with heap sand, carefully rammed and the joint or parting made and parting

riddled heap sand, is rammed, struck off, the gate pins removed and thoroughly vented, the lifting screw secured by a bar and the cope lifted off, the screw removed and the hole left by it plugged with sand, the base pattern and gates withdrawn, the mold dressed and the cope put back in place, the whole carefully clamped and rolled over, the sand around pattern nailed, the joint made, and the top cope pattern and flask put on. Facing sand as usual is riddled on and tucked around the pattern, iron bearings are now placed on each of the side core prints to help support the jacket core, the lifting screw inserted, bars tucked, flask filled with riddled heap sand rammed up and struck off, a bed of soft sand is spread over the top of the cope and the bottom board rubbed down to an even bearing, care being used, as there must be no hollows or soft spots which would allow the mold to strain. The board is now removed and the cope thoroughly vented with a  $\frac{1}{4}$ -in. vent wire, after which the cope is lifted off, turned over and laid on the bottom board, which has been laid on a level bed of sand. After slicking the joint the sand around the pattern is swabbed with a thin solution of molasses water, the pattern is lightly rapped and drawn from the sand, the swab is again lightly used on all projections and the edges of the core prints, and the mold is dressed or finished with the necessary tools.

Provision is now made for allowing the gas to escape

from the vents in the bottom of the jackets and port cores in this manner: Taking a hollow brass tube or sprue cutter  $\frac{3}{4}$  in. in diameter the molder forces it, in turn, through the sand at the center of the bottom of each print down through holes bored in the bottom board for that purpose. The mold is carefully cleaned of all particles of loose sand by a bellows or cleaner and then given a coat of plumbago with a camel's hair brush. A dating stamp pressed into the sand leaves the date in relief on the casting, which can thus be readily identified at any time as belonging to that day's cast.

The parting sand is now brushed off the joint of the cheek, the sand around the pattern swabbed and the pattern lightly rapped and drawn from the sand. The edges of the mold at the junction of the dome and barrels are secured with finishing nails, bosses C C, Fig. 3, are picked in and the corresponding cores are secured in place and the whole finished and blacked. This cheek is now lifted off and set aside, the four bosses D D in the second cheek are picked in and the mold finished and blacked, lifted off and set aside.

The loose sand is now cleaned out of the bottom cope, which, as already seen, was finished before rolling over. The molder now takes a gasoline torch and dries the dome or water jacket part of the mold, which must be

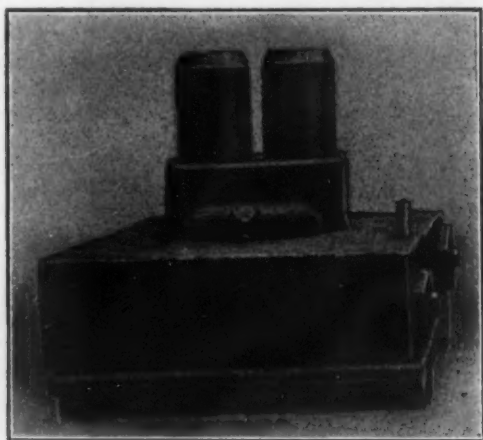


Fig. 5.—The Bottom Cope with the Cores in Position.

thoroughly dried, as the iron at this point is only  $\frac{1}{8}$  in. thick.

This done, the mold is ready for the cores, which are now brought from the racks and laid on a board near the mold. The cores are carefully cleaned and examined by the molder for any possible defects and an iron gauge fitted over both barrel cores to make sure that they are of exact length, for any variation in these would seriously affect the compression of gas in the cylinder heads. A small noodle of flour and water is rolled and laid in the bottom of the jacket and port prints, encircling the vent holes, to prevent any iron getting into the vents while being cast. The jacket core, which, as before shown, also contains the inlet and exhaust port cores, is now set in the mold, care being used to see that each part is properly aligned, as the variation of but a small fraction of an inch would shut off the metal and cause the loss of the casting. Straps are now inserted in the vent holes in the core at G G and a channel cut in the sand leading to slots in the sides of the flask. The straps are laid in the channels and sand tucked over them and slicked down and flour paste put over the ends of the core prints. This method absolutely prevents the iron running over the cores and into the vents, which if not allowed a free quick exit would, in foundry parlance, cause "fireworks" and destroy the mold and cores. The lower cheek is now set in place on the bottom cope and is in turn followed by the second cheek. The barrel cores, which lock into the port cores and are thereby accurately aligned, are next set in place, as shown in Fig. 5, and a roll of noodle placed around the vent holes. A  $\frac{3}{4}$ -in. vent hole is punched through each core print in the cope over the barrel cores, the runners are made and the cope is put on and securely

clamped. The vent straps are next drawn out from the flask and the mold is ready to be cast.

#### Casting.

Two ladles of hot iron are now brought up to the mold, carefully skimmed and the mold poured while a boy with a hot skimmer lights the vents. When sufficiently cooled the runners are broken and removed and the mold left to be shaken out and the casting removed to the cleaning room by the night force.

The next morning the cleaner removes all the core wires, using a hook, bar and pinchers for that purpose. The withdrawing of the wire loosens the burnt core sand, causing it to crumble, when it can be easily removed by lightly tapping the casting with a hammer and by a rolling motion which brings each core hole in turn to the bottom and allows the sand to escape. The casting is next sent to the emery wheel and the gates, &c., ground off; then to the pickle bench, where it is thoroughly drenched and allowed to remain all night. Next morning it is thoroughly washed with hot water and after becoming dry goes to the testing bench, where it is subjected to a water pressure of 150 lb. to the square inch and carefully examined for leaks, sweats, &c. This done, if perfect, it is marked and shipped.

It might be well to add here that the Manufacturers Foundry Company uses a special mixture for its cylinders, pistons and piston rings which experience has proved to be equal, if not superior, to any used by the much vaunted makers of foreign cars. All material entering into the making of these castings being bought on very close analysis and the mixtures governed by the same method, the buyer is assured of always obtaining uniform castings possessing a very high tensile strength, and in every way suitable to the use for which they are designed.

#### The Philadelphia Foundrymen's Association.

The one hundred and fifty-ninth regular meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club in that city Wednesday evening, September 5. There was a good attendance considering that this was the first meeting after the usual summer recess. Dr. E. E. Brown called the meeting to order and presided until the arrival of President Thomas Devlin. August A. Miller acted as secretary in the absence of Mr. Evans.

There was no formal reading of papers, the business session being taken up largely by a discussion of plans to take care of the American Foundrymen's Association and its allied organizations, which will meet in Philadelphia in annual convention in June, 1907. The president was instructed by motion to appoint a General Committee of Arrangements, to be announced at the next regular meeting of the association.

The report of the treasurer showed a balance of \$2278.68 on hand, with all bills paid. At his request a committee was appointed, consisting of the president, secretary and treasurer, to investigate and designate a suitable depository for the association funds. There being no further business the meeting adjourned, and those present proceeded to the roof garden of the club, where luncheon was served, during which a number of short addresses were made and the matter of the entertainment of the American Foundrymen's Association was still further discussed.

At Washington, on September 6, the Isthmian Canal Commission opened the bids for 40 mogul locomotives. The award was made to the lowest bidder, the Baldwin Locomotive Works, Philadelphia, whose bid is \$458,000 for the entire contract, Colon delivery. The bid of the Lima Locomotive Machine Company, Lima, Ohio, was \$475,000, and that of the American Locomotive Company, New York, \$526,000.

Five Mallet compound locomotives recently built by the Baldwin Locomotive Works for freight service on the Great Northern Railway are the heaviest ever constructed. Each locomotive has 12 driving wheels.



### The Steel Corporation's Proportion of Trade.

The *Bulletin* of the American Iron and Steel Association presents an interesting table showing the percentages of production of iron, steel, iron ore and coke by the United States Steel Corporation and by outside producers of the United States in 1902, 1903, 1904 and 1905. The figures are based on the most authentic statistics available, the corporation having reported to the American Iron and Steel Association its share of all the items covered in this statement. The table is as follows:

	1902.		1903.		1904.		1905.	
	Cor-	Inde-	Cor-	Inde-	Cor-	Inde-	Cor-	Inde-
	poration.	pend-	poration.	pend-	poration.	pend-	poration.	pend-
	Per cent.		Per cent.		Per cent.		Per cent.	
Shipments of iron ore from the Lake Superior region.....	60.4	39.6	58.8	41.2	53.8	46.2	56.0	44.0
Total production of iron ore.....	45.1	54.9	43.8	56.2	37.9	62.1	43.4	56.6
Production of coke.....	37.4	62.6	34.2	65.8	36.5	63.5	37.9	62.1
Bessemer, basic and all other kinds of pig iron.....	44.3	55.7	39.9	60.1	44.3	55.7	43.8	56.2
Spiegeleisen, ferromanganese, ferrophosphorus, &c.....	81.0	19.0	81.0	19.0	70.5	29.5	74.9	25.1
Total pig iron, including spiegel, ferromanganese, &c.....	44.7	55.3	40.4	59.6	44.6	55.4	44.2	55.8
Bessemer steel ingots and castings.....	73.9	26.1	72.0	28.0	69.0	31.0	67.4	32.6
Open hearth steel ingots and castings.....	52.4	47.6	51.0	49.0	50.4	49.6	51.4	48.6
Total Bessemer and open hearth ingots and castings.....	65.7	34.3	63.5	36.5	61.0	39.0	60.2	39.8
Bessemer steel rails.....	65.4	34.6	65.6	34.4	57.2	42.8	53.6	46.4
Structural shapes.....	57.9	42.1	60.3	39.7	55.1	44.9	54.6	45.4
Plates and sheets, excluding nail plate.....	59.4	40.6	59.9	40.1	58.0	42.0	57.4	42.6
Wire rods.....	71.5	28.5	73.1	26.9	71.3	28.7	69.9	30.1
Bars, skelp, nail plate, open hearth and iron rails, &c.....	31.1	68.9	29.8	70.2	28.6	71.4	31.0	69.0
Total of all finished rolled products.....	50.8	49.2	51.2	48.8	47.8	52.2	47.3	52.7
Wire nails.....	64.8	35.2	70.6	29.4	67.0	33.0	66.1	33.9
Tin plates and terne plates.....	75.1	24.9	75.5	24.5	71.3	28.7	71.3	28.7

In the products enumerated in the table, says the *Bulletin*, the percentages of the corporation show increases in but two instances—namely, coke and wire nails. In 1902 the corporation produced 37.4 per cent. of the total production of coke; in 1905 it produced 37.9 per cent., an increase of 0.5 per cent. In wire nails it produced 64.8 per cent. in 1902 and in 1905 it produced 66.1 per cent., an increase of 1.3 per cent. It will not be inferred from the figures we have presented that the United States Steel Corporation did not greatly increase its production of iron ore and of all forms of iron and steel from 1902 to 1905. On the contrary, it has in these four years made great progress in enlarging and utilizing its productive capacity in nearly all the lines mentioned. But the progress made by independent companies in the same years has been productive of aggregate tonnage results a little larger than those achieved by the corporation. The table completely disproves the statement so often made that the United States Steel Corporation is a monopoly which controls the iron ore, coke and iron and steel industries of the country, and that it stifles all competition in these lines of industrial development.

### Wages, Hours and Cost of Living.

The Bureau of Labor of the Department of Commerce and Labor, Washington, D. C., gives in its *Bulletin* No. 65, for July, 1906, an exhaustive presentation of the results of an investigation into wages and hours of labor in 1905 in the principal manufacturing and mechanical industries of the United States, taking identical establishments with those investigated in 1904. A summary of the results is as follows:

In 1905 the average wages per hour in the principal manufacturing and mechanical industries of the country were 1.6 per cent. higher than in 1904; the average hours of labor per week remained the same as in 1904, and 6.3 per cent. more persons were employed in the establishments investigated. As there was no reduction in the average hours of labor per week, the average weekly earnings per employee were 1.6 per cent. higher than in 1904. As there was an increase in the number of employees as well as in the weekly earnings per employee, there was a considerable increase in the weekly earnings

of all employees, or, in other words, in the amount of the weekly pay roll. This increase was 8 per cent. in the establishments investigated.

The retail prices of food, due weight being given to the quantity and cost of the different commodities consumed, were 0.6 per cent. higher in 1905 than in 1904. As the average wages per hour increased more than the retail prices of food, the purchasing power of wages increased. In 1905 the purchasing power of both hourly and weekly wages was 1 per cent. higher than in 1904, or, expressed in other words, an hour's wages in 1905

would purchase 1 per cent. more food than an hour's wages in 1904.

The average wages per hour in 1905 were 18.9 per cent. higher than the average for the 10-year period from 1890 to 1899, inclusive. The number of employees was 33.6 per cent. greater, and the average hours of labor per week were 4.1 per cent. lower. The average earnings per week in 1905 were 14 per cent. higher than the average earnings per week during the 10 years from 1890 to 1899. The aggregate weekly earnings of all employees—that is, the total amount of the pay rolls—were 52.3 per cent. higher in 1905 than the average during the 10-year period named.

The retail price of the principal articles of food, weighted according to family consumption of the various articles, was 12.4 per cent. higher in 1905 than was the average price for the ten years from 1890 to 1899. Compared with the average for the same 10-year period, the purchasing power of an hour's wages in 1905 was 5.8 per cent. greater, and of a week's wages 1.4 per cent. greater, the increase in purchasing power of weekly wages being less than the increase in purchasing power of hourly wages because of the reduction of the hours of labor during the period.

The average wages per hour in 1905 were 21.5 per cent. higher than in 1894, the year of lowest wages during the period covered, and weekly earnings were 16.7 per cent. higher. The purchasing power of an hour's wages was greater in 1905 than in any other year covered by this investigation, being 7.7 per cent. greater than in 1894, the year of lowest wages, and 1.3 per cent. greater than in 1896, the year of lowest retail prices. The purchasing power of a week's wages in 1905 was 3.5 per cent. greater than in 1894, but 2.7 per cent. less than in 1896.

The statistical summary of vessels totally lost, condemned, &c., published by Lloyd's Register, London, shows that during 1905 the gross reduction in the effective marine of the world amounted to 883 vessels of 792,354 tons, excluding all vessels of less than 100 tons. Of this total, 382 vessels of 527,978 tons were steamers, and 501 of 264,376 tons were sailing vessels. The percentage of losses to vessels owned was 4.47, which compares with an average of 4.42 per cent. for the five years 1900-4 and of 4.88 per cent. for 1895-1900.

## Oil Extraction.

### Improvements in Methods of Extracting Oil from Feed Water for Marine Boilers.

BY A. R. WILLETS, U. S. N.

Although oil is now rarely used in the cylinders of the vertical engines now so universally employed for propelling steamships it is still impossible to avoid its use on piston rods and valve stems, and also, to some degree, in the cylinders of the auxiliary machinery, especially where these are horizontal. It therefore continues to be necessary to provide means for abstracting oil from the feed water before it is delivered to the boilers. Many devices have been invented for this purpose and *The Iron Age* has published, from time to time, descriptions of the types adopted in the Navy, where the matter of boiler protection is so momentous. In recent years grease extractors have been considerably modified, and the outline of the improvements here presented, it is thought, will interest engineers in the mercantile marine service as well as those in the navy.

The most rational order of procedure for preventing oil accumulations in boilers is as follows: To minimize the oil used in the cylinders and on piston rods at the stuffing boxes; to extract as much oil as possible from the exhaust steam before it reaches the condensers; to extract oil from the condensed water passing from the condensers to the feed tanks; to extract it from the water in the feed tanks by passing it through filtering material, and to extract it from the feed water passing from the tanks to the boilers.

The cylinders of the main engines, being generally vertical, can be operated satisfactorily without oil. Oil, however, being used in considerable quantities on the piston rods at the stuffing boxes, will creep along the rods, particularly in the low pressure cylinders, where frequently the internal pressure is below atmospheric. Oil is also used in the cylinders of pumps and blower engines, and some auxiliaries and dynamo engines have oil baths in which the cranks and piston rods dip and from which oil finds ingress through packing boxes to the exhaust steam. It is from these sources that the bulk of the trouble continues to come. It is highly important to isolate the cylinders of those auxiliaries which operate in oil baths enough to remove the stuffing boxes from this bath. This is being done, especially in dynamo engines, to the very appreciable lessening of the amount of oil delivered with the exhaust steam.

Extracting the oil from the exhaust steam before it reaches the condensers appeals to the engineer as ideal, as the oil is kept out of the condensers, pumps, feed tanks and piping, as well as the boilers. While this has been attempted with a spirally arranged extractor which separates the oil by centrifugal action it has never been extensively adopted, owing to the obviously added back pressure in the exhaust and the necessarily bulky contrivance for handling freely the quantity of steam from large powers. Condensation of steam also occurs during this separation and much feed water is lost with the separated oil, unless a further separation of these two elements is effected. The difficulty of abstracting only the oil from the exhaust steam efficiently, automatically, without loss of feed water, and without mechanical difficulties, including close attention, has not as yet been satisfactorily overcome, so that this field is still open to the inventor.

Extracting the oil from the water of condensation as it passes from the condensers to the feed tanks has been but recently adopted in the navy, the methods used prior to this being the fourth and fifth in the above list, which will be commented upon later. The extractor used for this scheme, Fig. 1, is very much like the Maccomb bilge strainer described in the issue of April 27, 1893, only it is used in reverse order, the entering water being on the outside of a filter-cloth covered basket, through which it passes to the feed tanks. Owing to

the large amount of filtering surface needed to readily care for the great quantity of water condensed from high powered machinery it has been found advisable to simply use these strainers in the delivery pipes from the air pumps of auxiliary condensers in large ships; but as nearly all of the oil comes from these auxiliaries this has been quite satisfactory, and leaves to the filtering material in the feed tanks the care of the water condensed from the main engines proper.

In the operation of this apparatus it is necessary to frequently change the strainers, as they become clogged with oil. To do this quickly there is provided a spare basket covered with a clean filtering cloth or "stocking," which is always ready for use. A three-way plug cock is also provided, as shown in the sketch, by which the water can be shunted around the extractor instantly when it is desired to change the basket. The work of by-passing this water, throwing back the swing bolts of the bonnet of the strainer, removing the strainer and putting in a new one, closing up the box and shifting back the plug cock to its original position, can be accomplished in three minutes or less with the largest size thus far used—a strainer for a 6-in. delivery pipe.

As the exposed surface of strainer cloth should be at least 30 times the area of the delivery pipe, this basket must be comparatively large, and its handling is

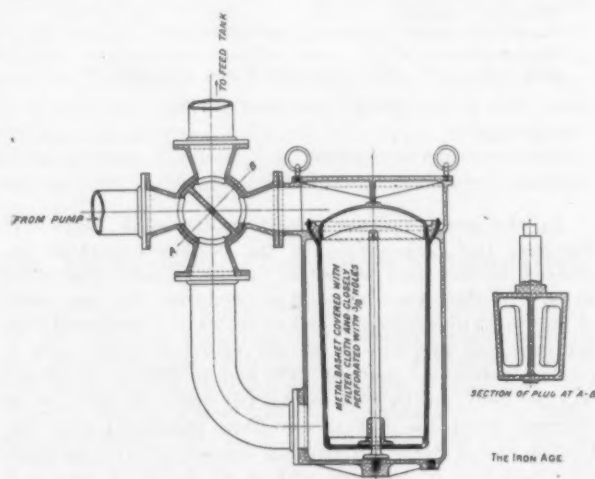


Fig. 1.—An Oil Extractor for Inserting Between the Condensers and the Feed Tanks.

more readily accomplished by having the strainer box placed so that the top bonnet is just above the level of the floor plates. It will be noticed that there is a central guide rod for the basket which prevents the outer filtering cloth from scraping against the sides of the chamber while being lifted out, as such scraping would cause the shedding of part of the accumulation of oil and decrease the efficiency of the strainer. As soon as this strainer is removed the spare basket is inserted and the box closed up. The stocking from the removed strainer is then taken off and a clean one substituted at once, the dirty one then being thoroughly washed and dried for future use. These stockings are made from ordinary linen filtering cloth simply sewed to shape. Of course there are short periods during the operation of changing in which the water is by-passed without filtering, but the quantity of oil thus escaping the strainer is comparatively small and is readily taken care of by the ordinary strainers in the feed tanks.

One might well ask why feed tank filters or strainers themselves do not prove amply efficient? As this is the next method in the list, it can be briefly stated that the principal difficulty lies in changing the material as frequently as demanded for proper protection. These feed tanks are large and are so built as to make the changing of the filtering material a serious piece of work, only to be attempted in port or when the engines are not in use. In fact they are not generally designed for opening up at all while running the engines, and as



a consequence much of the oil washes through where the quantity is at all considerable. Recently, however, there has been patented a device for such tanks by which the filtering cloth is gradually changed automatically, by being slowly rolled up on a roller at one end of the tank as it is unrolled from another at the other end, and there is so much merit in this arrangement as to make it the very best substitute in the tanks for stationary filtering material.

Fig. 2 illustrates the latest form of extractor for use in the method of extracting oil from the feed water as it passes through the feed pipes to the boilers. The form is such as to avoid very sharp turns in the flow, and the filtering basket can be changed by by-passing as in the arrangement illustrated in Fig. 1, the difference being, that the water is now under very high pressure and there is always more difficulty attending the changing of these strainers in the feed pipes, due not only to this high pressure, but also to the apparatus being necessarily located in the firerooms, where everything is hot and involved. It is therefore most desirable, in installing apparatus of this nature, to give careful consideration to its location, with a view to making the changing of baskets as easy and comfortable to the men as possible. This means everything to the complete success of the

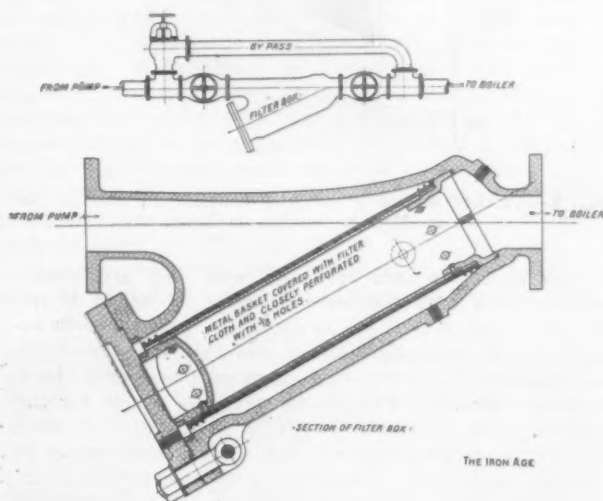


Fig. 2.—An Oil Extractor for Inserting in the Feed Line to the Boilers.

appliance, and those who have had long experience in the "whale's belly" of engine and fire rooms afloat can fully appreciate the truth of this statement.

The writer would advocate preferably the use of the filter boxes shown in Fig. 1 (not patented) wherever practicable. The pressure in these lines being never heavy, the parts may be made as thin as is consistent with good casting, the only precaution being to make the bonnets sufficiently stiff, with ribs, to prevent springing, as even a light pressure on such a large surface is apt to cause leaks at the bonnet joint. The use of swing bolts is also advisable in facilitating the changing of the baskets; and there should be fitted on the inlet side of the apparatus a small pressure gauge to indicate the time for renewing the baskets, the clogging up of the cloth gradually increasing the pressure on that side of the apparatus.

### The Production of Graphite in 1905.

WASHINGTON, D. C., September 11, 1906.—A very considerable increase in the production of graphite in 1905 is recorded in the annual report of the United States Geological Survey. The production of crystalline graphite in the States of New York and Pennsylvania in 1905 was 6,036,567 lb., with a reported value of \$237,572, an increase in quantity of 355,390 lb., but a decrease in value of \$875 as compared with the figures of the previous year. This brings the average price per pound slightly

below 4 cents, as against 41-5 cents in 1904. This average price means little, as the range of reported values was between 31-5 and 7½ cents. The statistics of production also fail to indicate fully the activity in the mining of crystalline graphite, as the tonnage of crude graphite reported as mined but not refined is not included in the totals given.

### Amorphous Graphite.

The graphite produced in the States of Georgia, Wisconsin, Michigan, Alabama, North Carolina, Rhode Island, Colorado and Nevada has generally been classed together as amorphous. The variation in the purity of this so-called amorphous graphite is extreme, some, like that of Colorado and Alabama, being essentially crystalline and of high grade, while the graphite mined in Georgia is an impure graphite schist. The total quantity mined in the States mentioned, which rank as producers on the basis of tonnage in the order given, was 21,953 net tons, valued at \$80,639, as against 16,927 tons, valued at \$82,925, the revised statistics of production for 1904. The average price per ton determined from these figures would be misleading, inasmuch as the reported values range from \$1.25 to over \$100 per ton.

In value of product New York leads with a production nearly equaling the rest of the country combined. Pennsylvania is second in rank, followed by Wisconsin, Georgia, Alabama and Michigan in the order named.

The imports of graphite in 1905 amounted to 17,457 tons, valued at \$983,034, as compared with 14,195 tons, valued at \$905,581, in 1904. It will thus be seen that the imports, which are of the crystalline variety, are of considerably greater importance than the domestic product.

### Uses.

The characteristics possessed by graphite make it a mineral of much industrial importance. The largest use that is made of it is in the manufacture of crucibles, muffles and other articles designed to be exposed to high temperatures. Considerable quantities are used in the manufacture of lubricants. The extreme thinness of the flakes and their flexibility enable them effectually to cover rough metal surfaces and thus to reduce the friction between the bearings. Flake graphite is also well adapted for use in the manufacture of paint, stove polish and electrotypes' powder. Large quantities of both crystalline and amorphous graphite are used for foundry facings. The impure and cheap graphite material mined in Georgia is used to color fertilizers. Another use of crystalline graphite is as a protective polish for gunpowder and as a packing material for the delicate electric lamp filaments, but a more unusual application has been its use to color and glaze both tea leaves and coffee beans, the pure graphite being a harmless material, which protects these against moisture and adds to their attractive appearance.

### Artificial Graphite.

The production of artificial graphite has steadily increased since its introduction upon the market in 1897, and in 1905 the increase was greater than ever before. The quantity of this variety of graphite that was manufactured in 1905 amounted to 4,591,550 lb., valued at \$313,980, which is the largest quantity produced in any year since its first introduction on the market. This is an increase of 1,343,550 lb. in quantity and of \$96,190 in value as compared with the 1904 production. The average price per pound received for the 1905 was 6.38 cents, bringing the price back to about that of 1903.

It would appear from these statistics that the use of the artificial product is being rapidly extended, and it probably now comes into competition with the natural graphite in many lines of manufacture, especially in the electrical trade. For certain purposes, however, it seems certain that nothing can take the place of the mineral and that the production of crystalline graphite in this country will steadily increase.

W. L. C.

The Trades Union Congress of Great Britain, in session at Liverpool, on September 7 unanimously instructed the Labor members of Parliament to introduce a bill providing for the nationalization of all railroads, canals and mines in the United Kingdom.

## An Iron Smelters' Village in India.

BY C. M. WELD.

Iron smelting is still practiced by the natives of India although the day of export of the famous wootz (steel) of the Deccan, the raw material of the Damascus blade, is now no more than a tradition. In fact, the tide has long turned, and foreign bars and rods of wrought iron and steel are invading even the distant jungle bazaar, the very home itself of the native product. For certain purposes, however, the village smith, or lohar, still prefers the soft jungle iron, and he pays a price for it measured by what he has to pay for the more advanced and more readily fashioned foreign article. The native smelter thus receives a mere pittance for his handful of product, but he continues to labor, clinging to his caste, although nearly pushed to the wall, typifying the intense conservatism of India. From the degenerate and poverty stricken battiwala of to-day back to the men who wrought the famous iron column at Delhi must indeed be a far cry.

The details of the present practice in India differ with almost every locality, and to enumerate these differences even if the data were at hand would extend these notes beyond reasonable bounds. It was my privilege to spend a half day in a village of smelters in the southern part of the Raipur District, Central Provinces. The practice obtaining there may well be taken as a fair type of present day Indian iron smelting, and as such merits description.

### The Village of Ungara.

Ungara's present position is a mile west of the southern arm of the great Dhullee Hill, in the Dondli-Lohara Zemindari. I say present position, as a smelter's village differs from the ordinary village in that it is temporary—it moves from place to place with the exhaustion of the immediately available supply of fuel for charcoal. As a consequence, the smelter is never a land holder; his village is seen lying in jungle, not surrounded by fields. He plies his trade during the eight dry months of the year and during the rains he works for a daily wage in the fields of the neighboring villages.

Eight families lived in Ungara at the time of my visit, all Gonds by race and agaries or smelters by caste. Each family operated one furnace or batti, men, women and children alike doing their share of the work.

Both ore and charcoal were brought from Dhullee Hill. No charges were paid for either, but an annual royalty amounting to \$2.92 per furnace was paid to the local zemindar or land holder within whose province the village lay. The ore, a rich weathered hematite, was dug from soft disintegrated pockets along the flanks of the hill, outlying portions of a very remarkable body of ore which occupies the greater part of both Dhullee and Rajara hills. It was carried in small baskets, 40 lb. at a time, to the village, and there broken by hand on flat stones to the size of a pea, to prepare it for the furnace. Charcoal was made by cutting, stacking and burning in heaps in the most primitive fashion. The wood of any tree of suitable size served for charcoal for the furnaces, but bamboo charcoal alone was used in the refining hearths.

### Description of the Furnace.

The furnace may best be described by aid of the accompanying sketch, Fig. 1, which represents a vertical section, front to back, with the tuyeres, bellows, &c., in position. A furnace in good repair but out of blast is well seen in Fig. 2, reproduced from a photograph.

To build a furnace, a shallow pit is first dug and a foundation is laid of clay. The stack is then built up of clay, mixed with a little straw or chaff, to a height of 40 in., the shield in front rising some 6 in. higher. It is roughly semicircular in plan, the straight front being 26 to 28 in. wide. The shaft has a diameter of 4 in. at the top and 9 in. at the boshes. The opening at the hearth is 8 x 8 in., the front wall is 2 to 3 in. thick, and the side and back walls are 12 to 15 in. thick. A band of twisted withes near the top serves to hold the structure together.

It takes about a week to complete such a furnace, and it will generally serve through one smelting season of eight months.

To prepare the furnace for blast, it is first cleaned and repaired wherever the previous operation has made repair necessary. The hearth is then packed with fine, wet charcoal, and the tuyeres are placed in position. These are two in number, made of potter's clay, 8 in. long and about 1/2-in. inside diameter. They are placed slightly diverging inward and at a slight angle downward. The outer ends rest on an upright iron rod. The front

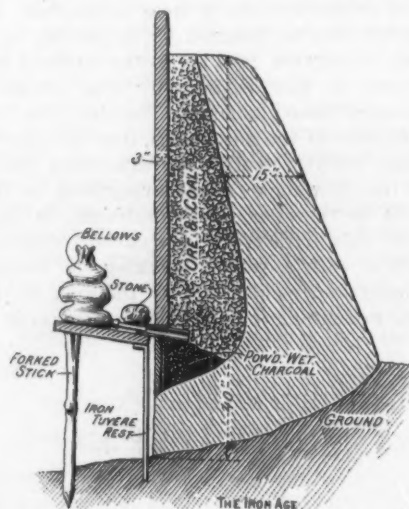


Fig. 1.—Vertical Section of an Iron Smelting Furnace of the Type Used by Natives in India.

of the hearth is then luted up with clay and finally smeared over with powdered charcoal. A board of triangular shape is next put in place, its three supports being a lug or projection on the iron tuyere rest and the two points of a forked stick, planted a foot or so back from the furnace. This board serves as a rest for the bellows. The furnace is now filled with charcoal, with a handful of iron ore on top, and live coals are blown in through the tuyeres. The bellows are then attached, all joints being carefully luted, the connection is weighted down with a stone and blowing begins.

### The Blast.

The bellows are made of untanned goat skin. They are two in number, cylindrical, and distended by means of bamboo rings. The top is left open and is gathered up and grasped by the hand in such a way as alternately to open and close the bag as it is extended and compressed. The two bags are drawn down at the lower end and fastened to a double clay nozzle, made to fit snugly into the outer ends of the two tuyeres. The bellows are about 10 in. in diameter and 15 in. long when stretched. The operator stands in front of the furnace, grasps a bag in either hand and alternately fills and expels, throwing his weight first on one, then on the other. Each bag is filled about 50 times a minute. Women as well as men take their turn, changing off every half-hour or so.

A pair of bellows costs the smelter in the neighborhood of \$1.30. Its life is about two-thirds of a smelting season.

### The Furnace Fed by Hand.

When the furnace is once well in blast it is fed continually with ore and charcoal, one handful of the former to two or three of the latter. This goes on till two small basketfuls of ore and two large basketfuls of coal have been consumed. The slag is removed from time to time by running a small rod into the luted hearth front. The puncture is in each case left open only a minute or two and is then luted up again. The first slag is generally drawn about half an hour after blowing in.

The heat runs for three to five hours. At the end of that time the bellows are removed, the hearth front is pried open and the pasty bloom of "kutchu," or half-finished iron, is drawn out. This is hammered to expel



the slag and is then cut into two pieces and each piece is further refined separately. The bloom weighs about 24 lb.

#### The Refining.

The refining is done on a small, flat hearth, 9 in. long by 5 in. wide, walled in on three sides, with an opening for a single tuyère at one end and a cinder notch connecting with a depressed slag pit at the other. The hearth is first covered with a layer of broken slag and bits of unreduced ore from the furnace. On top of this is laid a bed of bamboo charcoal, then comes the half-bloom and finally more charcoal is heaped around and over the latter. The charcoal is ignited and blowing continues for about one hour, fresh fuel being heaped on to replace that consumed. Only bamboo charcoal is used in this process, one large basketful being the usual requirement for each half-bloom. The slag runs off into the pit. The half-bloom is finally raked out, slightly hammered (to shape it, rather than to expel slag), and again cut into two pieces. This final product is known as pucca, or finished iron. The yield of pucca is 16 to 18 lb. per bloom of kutcha iron.

#### A Soft and Pure Product.

The pucca iron is, as a rule, an exceedingly soft and pure product, due chiefly to the low temperature at which the process is carried on. The reduction of metalloids and silicon and the solution of carbon are at their minimum. The fuel, itself practically free from sulphur, contributes alkalies to the slag, which take care of the sulphur in the ore. These same alkalies, furthermore, increase the fusibility of the slag, rendering the low temperature above noted possible. As no flux is added to the charge, the slag, aside from its alkali content, is practically a ferrous silicate, and the phosphorus in this ore is thus largely taken care of also, although at the expense of much metallic iron.

The analyses given below were made in Calcutta of samples taken by me of the iron ore, pucca iron and slag.



Fig. 2.—View of a Furnace of the Type Used by Natives in India.

While I should be inclined to question the silica result shown in the slag analysis the results as a whole indicate pretty clearly the operation of the furnace. Carbon in the iron was not determined:

	Iron.	Silica.	Phosphorus.	Sulphur.
Ore .....	61.44	5.05	0.055	0.082
Iron .....	99.37	0.30	0.010	0.007
Slag .....	51.66	24.60	0.150	0.077

The consumption of ore and fuel per unit of product is, as may have already been inferred, very great. The weights charged during a single heat are as follows:

	Pounds.
Ore .....	80
Ordinary charcoal .....	130
Bamboo charcoal .....	76

Thus 80 lb. of ore and over 200 lb. of charcoal are required to produce less than 20 lb. of pucca iron. The pucca iron is, moreover, really a sponge; the yield to the

smith after final expulsion of the slag and thorough working does not exceed 12 to 15 lb.

The value of the pucca product of one heat was, at the time of my visit, 22 $\frac{1}{2}$  cents. The cost to the village smith, then, of the native iron per ton of his finished product was from \$40.60 to \$42.24, while foreign bars brought from \$45.50 to \$52 per ton in the jungle bazaars. It was therefore evident that the smith was willing to pay from 10 to 15 per cent more for the foreign product than for the native, presumably owing to the greater ease of working.

#### Routine of Work.

The weekly outturn of each furnace at Ungara was directly dependent upon the available labor in each family. Of the eight families only three included as many as six able bodied members, counting men, women and children. The weekly routine of such a family was as follows:

One the first day iron ore was dug and gathered; the second day wood was cut and stacked; the third day charcoal was made; the fourth day ore and fuel were brought in and the furnace was prepared for blowing in; the fifth and sixth days four heats were run; the seventh day the week's product was taken to the nearest large bazaar and sold.

When the family included fewer than six members this routine could not be followed, as more time was required for gathering ore and making charcoal. The product of two heats would then generally represent a week's work.

I have already noted that the pucca product of each heat was worth 22 $\frac{1}{2}$  cents. The annual income of the family of six, running four heats a week, for 32 weeks in the year, was then \$28.60. If we deduct the expenses incidental to smelting, viz.: \$2.92 for royalty, \$1.95 for bellows (one and one-half pair) and, say, 33 cents for other expense, the net annual family income becomes \$23.40, or 32 $\frac{1}{2}$  cents per head per month. Where the family is smaller the net income per head becomes still less, owing to the heavier proportionate charge due to royalty and working expense.

The total output of an Ungara furnace, at best, barely exceeds 1 ton of pucca iron. It has become impossible for the smelter to meet the increasing local demand or in any way control his market. The minute scale on which he works and his great waste of raw material overcome any advantages he may have due to position, especially now that the facilities for transport are ever developing. That he has not already abandoned his unprofitable trade is a tribute to the iron bound caste system of India.

#### Niagara Power at the Lackawanna Steel Plant.

The transmission line by which the Lackawanna Steel Company's plant at Buffalo is to be furnished with Niagara Falls power by the Niagara Falls, Lockport & Ontario Power Company is nearing completion and it is expected that electrical power from the Falls will be in use in about 60 days. Power stations within the steel plant grounds have been erected and the transformers and electrical equipment incident to the change and involving an expenditure of about \$200,000 will soon be installed. Fifteen thousand horsepower will be taken at present, delivered at a voltage of 60,000, which will be transformed to 2000 volts before it is used. It is figured by the officials of the company that a considerable saving will be effected by the use of Niagara power as compared with the present method of electric generation by gas engines, and the gas at present consumed for the generation of electric power will be utilized to greater advantage for other purposes.

The population of Germany was 61,102,000 persons on July 1, 1906, against 60,605,183 persons on December 1, 1905, which means an increase of about 500,000 during the last seven months. In the course of the last 10 years the population of Germany has increased by 8,350,000, and during the last 20 years by 13,470,000. The increase of the population since the formation of the German Empire totals 20,100,000 persons.

### The Newton Cold Saw Slotting Machine.

A new two-blade cold saw slotting machine, recently built by the Newton Machine Tool Works, Inc., Philadelphia, Pa., is shown in the accompanying engraving. It is designated as the No. 3 crank shaft cold saw and is shown erected on the testing floor at the works, engaged on such work as it was in part designed for. The machine is equipped with two 36-in. diameter Taylor-Newbold inserted tooth saw blades, which are adjustable by the use of collars, to give any width between the blades from  $\frac{1}{2}$  to 8 in., varying by eighths of an inch.

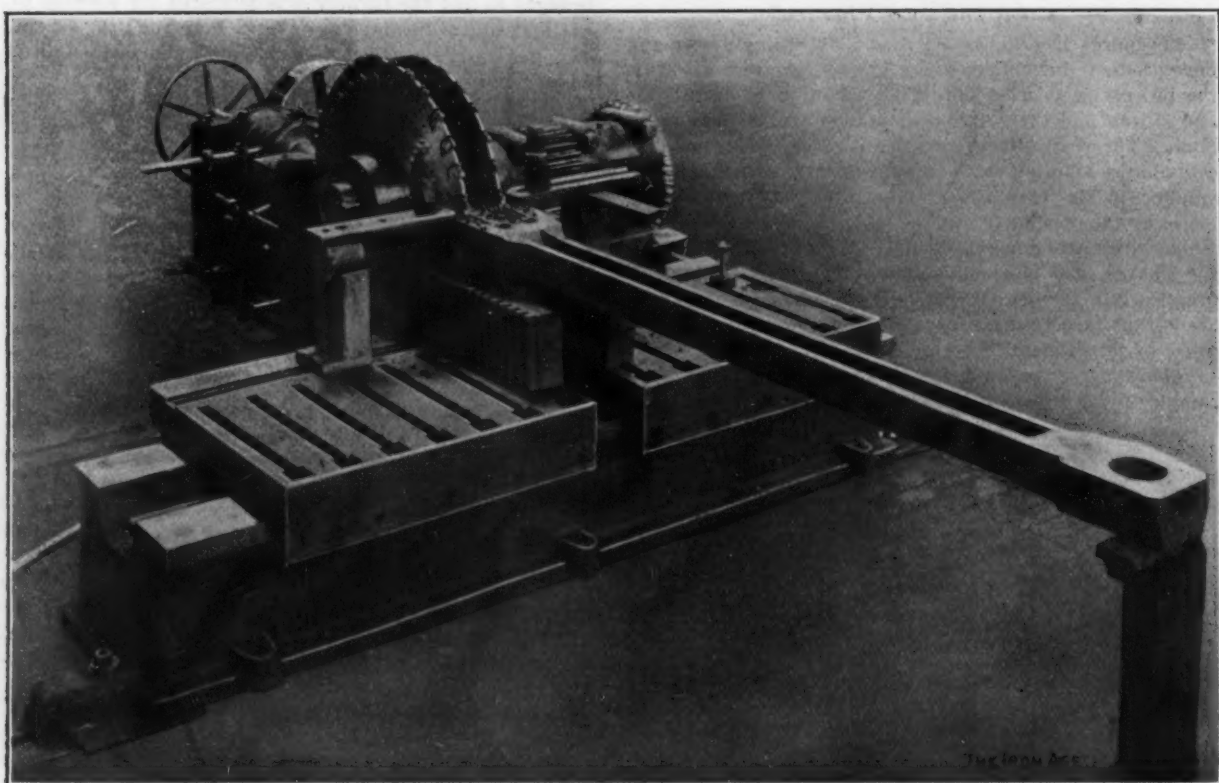
The body of the machine is of the standard Newton type, the spindle being driven by a phosphor bronze worm wheel meshing with a hardened steel worm of steep lead, in turn driven through spur gearing from the driving shaft. The feed is automatic and power quick return to the carriage is provided. The work tables are adjustable either independently or simultaneously. The main bed of the machine from end to

manufacture of iron and steel was \$167,420, and for steel ingots \$367,770. The total amount secured was \$123,000 over the previous year.

### Cuba Taking More American Goods.

A report issued the past week by the Department of Commerce and Labor says that the commerce of the United States with Cuba in the fiscal year just ended was greater than in any earlier year of the trade relations between the United States and that island. This is particularly true of exports. The imports from the island fell slightly below those of 1905, due to the fall in the price of sugar, but the exports to the islands were 25 per cent. greater than in 1905, 75 per cent. greater than in 1904 and about 120 per cent. greater than in 1903. Exports to Cuba aggregated \$47,763,688 in the fiscal year 1906.

Prior to 1895 the value of the imports into the United States from Cuba ranged in most years from \$50,000,000 to \$75,000,000. Of the five articles forming the bulk of our



The No. 3 Crank Shaft Cold Saw Built by the Newton Machine Tool Works, Philadelphia, Pa.

end is 12 ft. 4 in., and the base carrying the adjustable work tables is 8 ft. 9 in. long. A 15-hp. motor is necessary to drive this machine, and preferably of the two-to-one variable speed type. For belt drive a pulley 12 in. in diameter with a 6-in. face is used, the ratio of the gearing from the driving shaft being 44 to 1.

This machine is adaptable to all classes of cutting off work, round or square stock, in addition to slotting automobile cranks, cranks for center crank engines, locomotive connecting rods, straps, guides, yokes and similar work. By using a fixture connecting rods up to 5 in. wide can be cut to a depth of 22 in. with this machine. An example of this class of work is shown in the illustration, where a locomotive connecting rod, 5 in. thick in the body, is being slotted, with a width between cuts of  $5\frac{1}{2}$  in. The cuts were made to a depth of 12 in. in 14 min. The approximate weight of the machine complete is 17,000 lb.

The Lake Superior Corporation, during Canada's last fiscal year, ended June 30, received \$535,190 from the Dominion Government in the form of bounties. The entire amount was secured by the subsidiary company, the Algoma Steel Company. The amount earned for the

imports from Cuba, sugar amounted in value in 1906 to \$60,000,000; tobacco, \$13,500,000; cigars and cigarettes, \$4,000,000; iron ore, \$2,000,000, and bananas, \$1,000,000.

The increase in shipments to Cuba, while visible in many articles, occurs chiefly in manufactures of iron and steel, of which the total exports to the island were \$9,879,648 in 1906, against \$6,164,908 in 1905.

The effect of the present difficulty in getting mortgage loans on real estate in New York City, coming at the end of a period of great building activity, is beginning to show itself plainly in the steadily increasing number of mechanics' liens filed at the County Clerk's office. In one day recently the number of these claims filed, most of them against properties of speculative builders in northern Manhattan and the Bronx, were fifty-two. The tightness of the real estate money market not only promises to check the volume of new business in building this fall, but it is also occasioning much trouble for building operations now in progress. Building loans are almost unobtainable, and such permanent loans as are being made on recently completed tenement and apartment houses are said to be on the basis of very conservative appraisals.

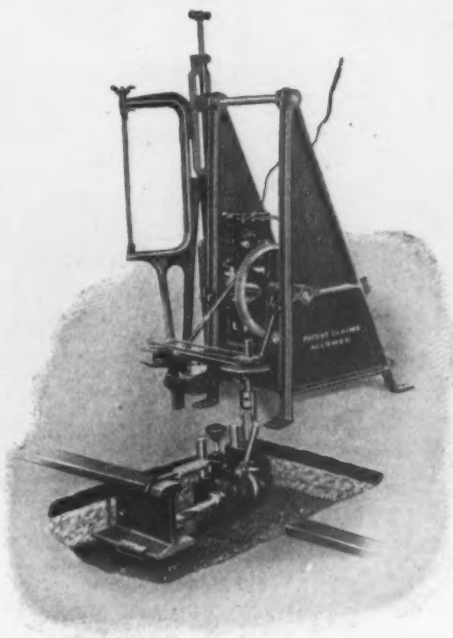


**Hewitt's Portable Hack Saw and Drill.**

A machine designed for sawing or drilling car rails in position, and which can also be used on I beams and other structural work, is illustrated herewith. It was recently put on the market by E. C. Atkins & Co., Indianapolis, Ind., and, being portable, is especially well adapted for yard work, as it is much easier to move the machine from place to place than to handle 60-ft. rails and bring them to the saw. The machine can be moved easily by two men, using handles which are provided for the purpose. For street railway construction or repair work the machine is particularly serviceable, the power being secured by tapping the overhead wire. The saving in time and labor over the old method of hand sawing can be readily appreciated. Another material advantage is that cars may be allowed to pass without disturbing the setting of the apparatus, it being only necessary to swing the saw, if that tool happens to be in use, up into the position shown in the illustration.

The machine is equipped with a motor, starting box, and cut-out, all self-contained. The drill attachment can be located anywhere within 30 in. of either side of the center of the machine, and can be raised or lowered for use on any rail. One man is sufficient to operate the machine. The time required is only about one-half of that of the older method.

The machine is 42 in. high, occupies a space of 20 x 40 in., and weighs, without the drill, 325 lb., and with it, 400 lb. The first 25 machines have been sold and are claimed to be giving splendid satisfaction. The first



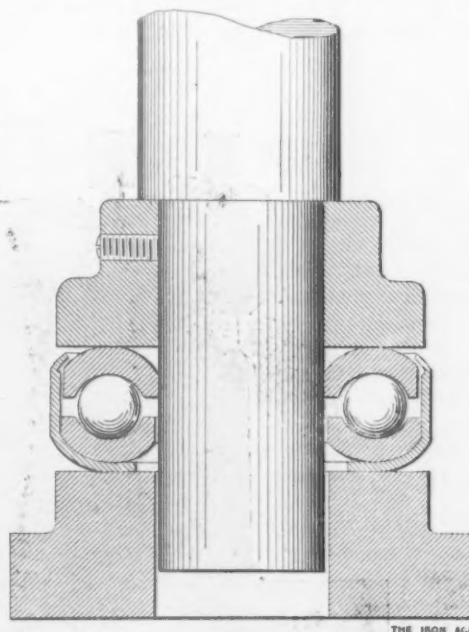
Hewitt's Portable Electric Hack Saw with Drill Attachment, Sold by E. C. Atkins & Co., Indianapolis, Ind.

machine made has been in use over a year by the Indianapolis Terminal Traction Company, and a second has just been bought by that company.

The International Mining Exposition Company, 564 Monadnock Block, Chicago, Ill., has issued a circular outlining a plan for holding an exposition in New York City early in 1908 "of all kinds of mining machinery, minerals, chemicals, precious stones of every nature and all known kindred products of the earth, whether liquid or solids." The exposition is to be opened to the entire world for exhibits and to be purely for the benefit of the mining industry. The officers of the company are as follows: William M. Porter, president and director general; W. H. A. Davidson, vice-president and chief of machinery department; O. J. Kloer, secretary and chief of state and foreign exhibits, and J. J. Voss, treasurer and auditor of accounts. The plan contemplates an exposition of four weeks in duration.

**The "Thrust Only" Ball Bearing.**

A new type of ball bearing, intended only for thrust action, is illustrated herewith, showing it used as a step bearing for a vertical shaft. The principal parts of this bearing, which is known as the "Thrust Only" bearing, are two polished and hardened steel raceways, a soft metal retaining jacket and the steel balls. The jacket prevents the parts from being separated, and hence keeps the balls from falling out if the shaft should be lifted. The upper raceway is secured to the shaft, but runs freely in the casing, while the lower raceway



The "Thrust Only" Ball Bearing, Made by the Pressed Steel Mfg. Company, Philadelphia, Pa.

is secured to the casing and has no contact with the shaft, insuring an even distribution of the thrust action on the bearing and also centering the weight on the balls. The bearing is so mounted that the metal jacket rests directly on the part that remains stationary, and as no other portion of the jacket is subject to pressure its shape is permanently maintained. The principal features of this bearing are its compactness and the ability to use it without any adjustment or fitting. It is particularly adapted to moderate weight service, such as occurs in the lighter and medium classes of machinery, as well as for hand tools. It is made in sizes for shafts ranging from  $\frac{1}{4}$  to  $1\frac{1}{2}$  in. in diameter. This new bearing, which is made under patents granted to O. C. Knipe, is being placed on the market by the Pressed Steel Mfg. Company, 545 Bourse Building, Philadelphia, Pa.

The Phoenix and Hoerder companies, two of the largest coal and iron companies in Germany, have decided to consolidate. Meetings have been called for October 10 to approve the plan, which includes an increase in the combined capital. The present capital of the Hoerder Company is \$6,735,000, and that of the Phoenix Company \$8,750,000. The aggregate capital of the amalgamated companies, including debentures, will be \$20,250,000, which is exceeded by only two other coal and iron companies in Germany.

The American Vanadium Company, Frick Building, Pittsburgh, Pa., is distributing a pamphlet which reproduces an address delivered by Alexander E. Tucker before the Automobile and Cycle Engineers' Institute of England, entitled, "Vanadium—a Valuable Motor Car Steel." This address sets forth the very remarkable properties of vanadium steel. The American Vanadium Company mines vanadium ore and manufactures ferro-vanadium, having a daily capacity of 10 tons.

## Balanced Draft Gas Producer Furnace

### As Applied to Steam Boilers.\*

BY EMBURY M'LEAN.†

The balanced draft gas producer furnace is a mechanical apparatus for accomplishing commercially perfect combustion of fuel under boilers or in any furnace. The result is attained through a method of controlling the elements of combustion and the conditions under which they combine. The resulting economies average about 25 per cent. in the installations made to date, with about the same average increase in capacity. The ca-

The draft is balanced by throttling the chimney suction in exact proportion to the speed of a specially designed fan blower which supplies air to the ashpit, and its speed in turn is governed by variations in the boiler pressure. The rate of fuel feed is also controlled by the variations in boiler pressure, so that a constant ratio of air to coal is maintained for all rates of combustion. The attained result is that 12 lb. of air combining with 1 lb. of coal produce maximum efficiency, maximum economy, and reduce to a minimum the liability of injury to the furnace and boilers present in forced or natural draft conditions, due to the inrush of cold air when the furnace doors are opened.

The first impression from the illustrations may be that the furnace is of the underfeed stoker type, whereas

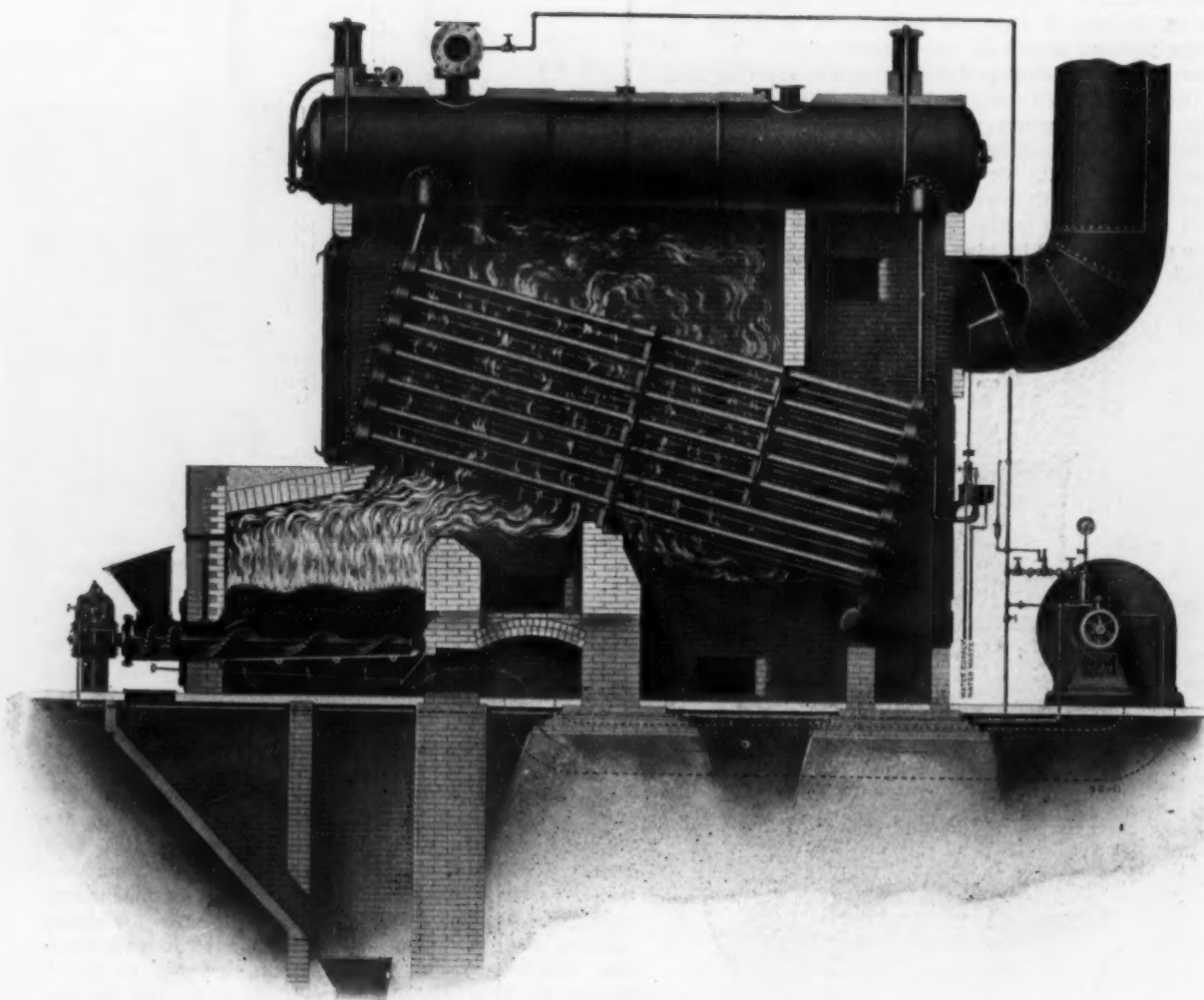


Fig. 1.—The Balanced Draft Gas Producer Furnace Built by the Engineer Company, New York City, Applied to a Water Tube Boiler.

capacity increase has amounted, in exceptional instances, to over 100 per cent.

Highly unbalanced drafts to quicken the fire have been so universally employed that prejudice is incited against the contention that their use is inherently wrong. Balanced draft automatically maintains atmospheric pressure in the furnace and limits the air introduced to that required for perfect combustion through the entire range of demands upon the boiler. The gas producer part of the furnace is a mechanical method of feeding the coal into the furnace so that the heat liberates the moisture and volatile matter, which combines with the requisite quantity of air, heated to the temperature of combustion essentially as in a producer gas furnace. The carbon is then entirely consumed while passing down the inclined grates.

the reverse is true; it operates on the overfeed principle. The design departs from all precedent, and the conveyor worm acts as a conveyor for only about one-third of its length. The pitch of the worm of the conveyor changes, just back of the front furnace wall, from an angle in which conveying predominates to an angle in which lifting predominates. The coal is forced from the hopper through the entrance tube and into the U-shaped trough, from which it is lifted to the surface of the fire and allowed to roll gradually down the surfaces of the inclined grates, the proper inclination of which has been accurately determined. The variations in pitch of the conveyor worm, to provide an even distribution of coal from front to rear of the furnace, have also been accurately determined. In operation the fuel assumes an uneven surface from front to rear of the furnace, as shown in Fig. 1, and has a wave like motion, each wave corresponding to a cycle of the conveyor worm. This movement

\* Abstract of a paper read before the Brooklyn Engineers' Club.  
† Of The Engineer Company, 111 Broadway, N. Y.



has been found to be exceedingly advantageous, assisting in loosening up the fuel and freeing the volatile gases, accentuating the producer gas furnace effect.

Ordinary furnaces coke the coal by slow combustion. In the balanced draft gas producer furnace the volatile gases are driven off by heat before combustion takes place, no air being admitted to the green coal. As the thickness of the bed of fuel on the inclined grates decreases, due to the contour of the top grate bars (Fig. 2), the amount of air passed through correspondingly increases, producing the ideal condition of slow combustion at the start, gradually increasing to a maximum rate. Horizontal dumping grates extend from the lower ends of the grate bars to the side of the furnace. The coke and the residue pass down the inclined grates, and by the time they reach these flat dumping grates have been reduced to incandescent ash, which is from time to time dumped into the ashpit. A small part of the air which passes through the incandescent ash combines with any remaining particles of carbon, but the greater portion after being heated by the hot ashes combines with the volatile gases from the central part of the furnace.

An increased area of grate surface is obviously obtained with these inclined grates over ordinary grates. Besides this

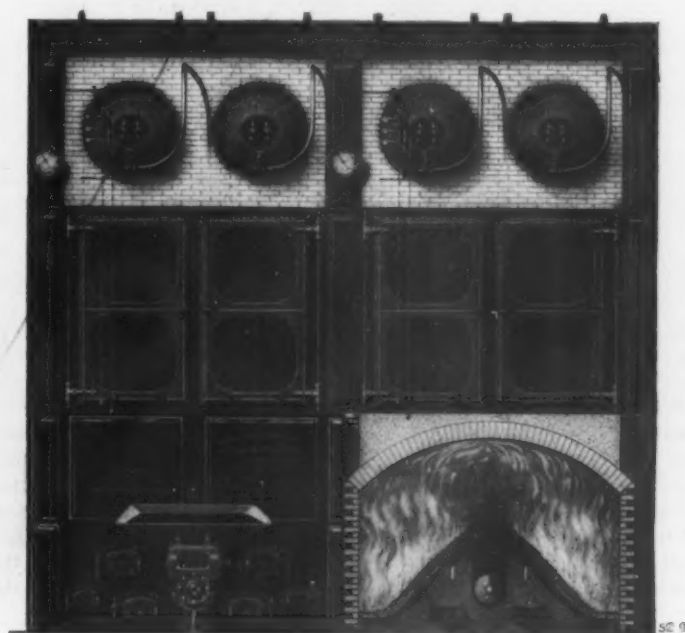


Fig. 2.—Front View and Cross Section of the Furnace.

increased grate area heat is produced by the combustion of the gas over the entire length of the trough between the grates. In other words, the space occupied by the trough is an effective portion of the furnace. Air is not fed to the trough, and there is nothing in the furnace that corresponds to tuyeres in stokers of the underfeed type. Combustion cannot take place in the trough, even though the supply of coal at the hopper should be interrupted or discontinued. Neither the worm nor any part of the conveyor proper can be subjected to injurious heat.

As just the exact quantity of air necessary to maintain the rate of combustion to keep up the boiler pressure is supplied, and there is no suction from the chimney to draw an excess (usually as much as 100 per cent.) of air through the fire, or through the fire door when open, or through cracks in the boiler setting, or through porous brickwork, the temperature of combustion is not reduced by such excess of air; nor are the gases diluted and their temperature lowered, resulting in loss of efficiency of the heating surface and the carrying of an excess of heat up the chimney. It follows that as the blower can be run at maximum speed with a minimum loss of heat up the chimney not only can greatly increased economy be obtained when using the better grades of fuel, but the cheapest grade of fuel can be burned economically and at the same time the normal boiler capacity maintained.

Analysis of the chimney gases, where balanced draft is used, demonstrates that this result is effected, and it is not uncommon to obtain an average result of from 15 to 18 per cent. of  $\text{CO}_2$ , with scarcely a trace of  $\text{CO}$ , and 3 to 5 per cent. of  $\text{O}$ .

As the rate of absorption of heat by a boiler varies with the difference of temperature between the gases and the boiler it is evident that the increased initial temperature of the gases in the balanced draft gas producer furnace will result in a much higher rate of evaporation for the boiler. Furthermore, as the air is restricted to one-half the amount ordinarily supplied to the furnace the volume of the gases generated is reduced to substantially one-half that usually produced by the combustion of a given amount of coal. Consequently the velocity of travel of the gases through the boiler can be reduced one-half and still pass the same number of heat units through the boiler in a given time.

As time is an element in the absorption of heat by the boiler it is evident that with balanced draft the boiler will absorb a much larger proportion of heat from the gases. If the temperature of the waste gases remained the same in a boiler after it is equipped with balanced draft as before, it is evident that the number of heat units passing up the chimney has been reduced one-half, due to the decreased volume of gas. If the temperature of the terminal gases is lower than under ordinary conditions it is evident that more than one-half of the heat units, which were formerly wasted by passing up the chimney, have been absorbed by the boiler in useful work.

When it is borne in mind that in a boiler of the Babcock & Wilcox type about 80 per cent. of the total evaporation is effected in the tube surfaces between the front headers and the first set of baffle plates at the bridge wall it is evident that a boiler of this type can be operated with the balanced draft system with no baffle plates, without reducing the efficiency, and with a large increase in the evaporating capacity. In other words, a boiler so equipped would evaporate between 6 and 7 lb. of water per square foot of heating surface at substantially the same efficiency that it now evaporates 3.4 lb. of water when operated at its present rated capacity.

A most important feature of the balanced draft gas producer furnace is its adaptability to great fluctuations of loads on the boilers; also its ability to adapt itself automatically, without any adjustment, to different grades of fuel. It is possible to change instantly from anthracite to bituminous coal, or *vice versa*, without any change in the adjustment of the apparatus, and without any variation in steam pressure during the change. Another feature worthy of consideration, especially in municipalities where there are laws against the smoke nuisance, is that highly volatile coal can be burned smokelessly, even when the boiler is operating considerably above its rated capacity.

Economy in labor is another great consideration, as little effort is required of the operator, even though the furnace be forced to the highest heat conditions. Due to the limitation and even distribution of air supplied there is no clinker formed, so that the ash can be readily dumped into the ashpit, and, if desired, as readily removed by automatic machinery. Where the coal is fed to the hoppers through chutes one fireman can easily attend to 2000 hp. of boilers.

The front end of the conveyor shaft is placed in a ball bearing journal, so situated that the heat of the furnace does not reach it. The end thrust from the shaft when in operation is received by a flange equipped with ball bearings. The outer edge of the worm is corrugated, so that foreign substances introduced with the coal, such as nails, spikes or chips of wood, cannot wedge between the worm and the trough. So effective is this arrangement that it is possible to pass a bucket of wrought iron and cast iron scrap from the hopper into the furnace without interfering with the operation of

the apparatus or the feeding of the coal. Lump bituminous coal may be used without the intermediary of a crusher.

The balanced draft gas producer furnace has been subjected to an exceptionally severe test at the plant of the American Smelting & Refining Company at Perth Amboy, N. J., where the full working conditions prevail continuously 24 hr. a day, including Sundays and holidays. Since January 2, 1906, there has been but one shutdown, and that for but a single day, for the purpose of cleaning the boilers. Nothing has been spent for repairs or renewals. At this plant in evaporation tests with the No. 2 buckwheat anthracite coal the furnace showed an evaporation of 10.1 lb. of water from and at 212 degrees per pound of dry coal, and with bituminous coal 11.2 lb. of water from and at 212 degrees per pound of dry coal. Results of tests in a few of the plants

Strauss, counsel for the miners' protective organization. W. Wickham, who appeared as chief counsel for the New Jersey Zinc Company, importer of the ore, cross examined Mr. Ihlseng with the intention of shaking his testimony. The expert told about the composition of zinc ore, and maintained that it should be regarded as a metallic mineral substance, with duty at the rate of 20 per cent. The expert said that his view of the composition of the ore was in harmony with that of Dr. D. T. Day, the United States Geological Survey.

John R. Holmes of Joplin, Mo., chairman of the protective organization, described the general commercial understanding of the composition of zinc ores, and submitted other data relating to the question of customs classification. Others who testified were G. W. Chase, Fayetteville, Ark.; T. C. Molloy, Joplin, Mo.; A. R. Huntley, Joplin; Calvert Spensley and W. S. Ross, Min-

Table Showing the Increase in Economy and Capacity Effected by Balanced Draft.

Name of firm.	Kind of draft.	Type of boilers.	Rated horse power.	Horsepower developed.	Increased capacity with balanced draft.	Kind of coal used.	Cost of coal per ton.	Water evaporated per pound dry coal.	Water evaporated per pound combustible.	Cost of 1000 hp. per hour.	Saving effected.
					%		Lb.	Lb.	Lb.	\$	%
Midvale Steel Company, Philadelphia, Pa.	Natural.	W. T.	260	340	..	Soft.	2.70	9.00	10.47	4.62	..
	Balanced.	W. T.	260	340	6.5	Buck.	2.25	8.05	10.06	4.30	6.9
American Smelting & Refining Company, Perth Amboy, N. J.	Forced.	W. T.	500	505	..	Rice.	1.75	7.35	9.22	4.10	..
	Balanced.	W. T.	500	769	52.3	Rice.	1.75	9.20	10.63	3.28	20.0
Baldwin Locomotive Works, Philadelphia, Pa.	Natural.	W. T.	600	587	..	Soft.	2.70	8.62	9.71	4.82	..
	Balanced.	W. T.	600	634	8.0	Buck.	2.25	8.24	9.77	4.21	12.6
	Balanced.	W. T.	600	643	9.5	Rice.	1.75	9.10	10.67	2.97	38.4
	Balanced.	W. T.	600	709	36.1	Buck.	2.25	8.80	10.29	3.94	18.3
Albany Water Works, Albany, N.Y.	Steam jet.	H. R. T.	340	356	..	Rice.	2.07	7.27	8.03	5.26	..
	Balanced.	H. R. T.	340	420	18.0	Rice.	2.07	9.46	11.57	3.79	28.0
	Balanced.	H. R. T.	340	481	35.0	Rice.	2.07	10.22	11.71	3.52	33.0
U. S. Post Office Building, Brooklyn, N. Y.	Natural.	H. R. T.	160	172	..	Soft.	3.30	10.50	12.00	5.05	..
	Balanced.	H. R. T.	160	172	..	Rice.	2.35	8.80	10.89	4.28	15.1
Perth Amboy Chemical Company, Perth Amboy, N. J.	Natural.	W. T.	120	124	..	Pea.	2.80	6.83	8.15	7.10	..
	Balanced.	W. T.	120	185	49.0	Buck.	2.20	9.57	11.80	3.96	44.0
Bement, Miles & Co., Philadelphia, Pa.	Natural.	W. T.	135	132	..	Soft.	2.70	7.75	8.83	5.37	..
	Balanced.	W. T.	135	195	47.7	Rice.	1.75	7.83	9.16	3.45	35.0
Flatiron Building, New York.	Natural.	W. T.	340	267	..	Soft.	4.00	9.77	10.60	6.40	..
	Balanced.	W. T.	340	383	43.4	Rice.	2.88	9.61	11.25	4.20	34.3
	Balanced.	W. T.	300	388	43.8	Soft.	4.00	11.50	12.10	5.33	16.7
Mutual Life Insurance Building, New York.	Natural.	W. T.	300	139	..	Brkn.	4.95	9.28	11.21	8.20	..
	Balanced.	W. T.	150	167	20.1	Buck.	3.25	10.10	11.95	4.95	39.6

where the furnace has been installed are given in the accompanying table, showing the conditions before and after the change in equipment.

Obviously there is nothing to prevent the operation of an ordinary furnace with flat or dumping grates using hand firing balanced draft. In fact the original researches, inventions and patents were in connection with such furnaces and most satisfactory results have been obtained under these conditions.

The method described, as well as the particular equipment to effect the results, are all broadly covered by United States and foreign patents, granted to John MacCormack, John C. Quinn and the writer. These patents are owned by the Engineer Company, 111 Broadway, New York.

### The Zinc Ore Duty.

The Board of United States General Appraisers granted a second hearing on September 6 in the test case brought by the Treasury Department to determine the dutiable classification of zinc ores. At the first hearing, held July 2, the importing interests presented their side of the case. Last week's session of the lower customs tribunal was accordingly devoted to hearing the arguments of the mine owners, of whom nearly 400 were represented. Last week's hearing turned largely on the question of the composition of the zinc ore, the mine owners present insisting that it was a metallic mineral substance and therefore dutiable at the rate of 20 per cent.

Prominent attorneys were present at the hearing representing the New Jersey Zinc Company, and these subjected the mine owners' witnesses to a severe cross examination, with a view to demonstrating that the ore cannot properly be classified as a metallic mineral substance. Axel O. Ihlseng, a zinc ore expert, spent a great deal of time on the witness stand in behalf of the mine owners. He was examined at length by Everit Brown and J. F.

eral Point, Wis.; D. B. Long, Amoose, Mo., and others. All of the witnesses testified that in their opinion the ore should be held dutiable at 20 per cent., the classification now being imposed by the Government. The tariff fight over the admittance of zinc ore into this country duty free, or at a nominal rate, has resulted in a line up of the domestic mine owners on one side and the smelters on the other.

According to the miners a 20 per cent. duty on ore is absolutely necessary for the protection of the producers, as they allege that the smelters have been using the spelter duty of 1½ cents per pound to force down the price of zinc ore produced in the United States. In this connection it was said that at the present time the Joplin District produces only about 30 per cent. of the zinc ore used in the country, whereas seven years ago the proportion of ore taken out of the mines approximated 70 per cent.

Representatives of the New Jersey Zinc Company deny all of the allegations made by the mine owners and point out that there is not sufficient ore produced in the United States to keep the furnaces running and that consequently it is necessary to look to Mexico and British Columbia for extra supplies. Under these circumstances the smelters desire either a low duty or else free entry under the tariff provision for calamine. The opposing counsel will be given an opportunity to submit final briefs, after which the Board of Appraisers will take the case under advisement and later formulate a decision.

According to the Cologne Gazette, the new German 19,000-ton battleship, which will be a rival of the British Dreadnought, will carry 16 big guns, compared with the Dreadnought's 10. They, however, will be of rather smaller caliber, although their enormous length, 46 ft., will enable them to carry an unusually heavy charge, while the projectiles will be 280 lb. heavier than any of the present German projectiles.



### The McCrosky Universal Adjustable Reamer.

A tool unique in its class is a patent adjustable bottoming reamer brought out by the F. B. McCrosky Mfg. Company, Meadville, Pa. Among its peculiar advantages are that it is accurately and easily adjusted; that it reaches the bottom of any hole that does not penetrate, and that its blades are held rigidly their entire length. The blades are made of the best obtainable material, and are tempered by a special process to make them all uniform. There are no screws or small parts to get out of order at a critical moment, these being replaced by an internal collar on the front end instead of an external collar, as in older forms made by the same company.

The construction of the reamer will be understood from the broken out view given in Fig. 1. Fig. 2 shows

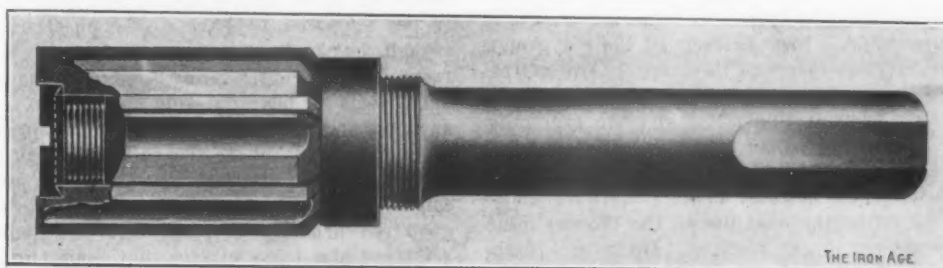


Fig. 1.—The New McCrosky Universal Adjustable Reamer, Machine Type.

a complete reamer of the adjustable shell type. In principle the reamer is simple, depending for its adjustment on the longitudinal movement of the blades over inclined bearing surfaces to effect the expanding and contracting. To enlarge the diameter of the reamer the rear collar is released and followed up by the front collar with a special wrench, then, by tightening the rear collar, the blades are locked in their new positions. It is claimed to be impossible for them to be loosened by vibration caused during use. The convenient manipu-

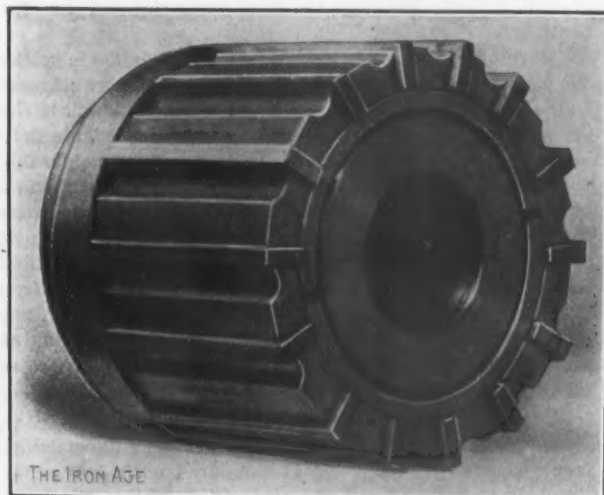


Fig. 2.—The McCrosky Adjustable Shell Reamer.

lation of the reamer makes it a satisfactory substitute for solid reamers as well as other adjustable reamers, inasmuch as the life is practically unlimited, the blades being easily renewed at small cost.

The shell reamers, such as are shown in Fig. 2, are made in all standard sizes from 1½ to 10 in. The smallest sizes of the machine and hand reamers are 1¼ in., and the largest, 2½ in. The latest improvement in connection with the hand reamers is the hardening of the shank, which is a feature that will appeal to practical men. The number of blades varies from 6 to 10, depending on the diameter of the reamer.

The bodies of the reamers are made of 30 carbon steel, and the blades, which are the most important part, are of selected steel, tempered by a special process at a uniform temperature, which insures the quality of the

blades and the certainty that all will be of equal hardness. In all of the reamers the blades are staggered, to obtain perfectly round holes. On special order the reamers are furnished with high speed steel blades.

An important benefit derived from the use of the internal collar at the front end is that, in that situation, it does not interfere with the cuttings working freely away from the cutting edges, and, what is more important, it allows the blades to be extended beyond the body of the reamer so that holes may be reamed clear to the bottom, or the ends of the blades used for cutting shoulders.

The body of the reamer consists essentially of a barrel with radial slots of decreasing depth from front to rear. In these slots the blades, with corresponding inclined lower edges, are inserted. The body is threaded

at both ends. The rear collar screws upon an external thread at its end and is exposed on the outside of the reamer. The front collar is recessed so it will be entirely within the cutting edges of the blade, and engages internal threads on the body. Both collars have concave inner faces where they engage the ends of the blades, which are tapered to correspond. It will be noticed that the blades are so shaped and proportioned that they overhang the front collar and extend slightly beyond it and the end of the body portion so that the collar in no way interferes with the working out of the cuttings. The front collar also so closes the space between it and the ends of the blades that there is no space for gathering and retaining chips.

The announcement that the exports of iron and steel from the United States in the fiscal year ended June 30, 1906, reached higher figures than in any previous year, has prompted the *London Iron and Coal Trades Review* to compare the figures of British and American exports in those commodities where comparison is possible. For this purpose it has taken the American exports for the fiscal year ended June 30, and in the case of British exports has assumed that for the year 1906 they will be in proportion to the exports for the first half of the year. This calculation gives the following table:

	Great Britain. Year 1906, estimated.	United States. Fiscal year, 1905-06.
	Tons.	Tons.
Pig iron.....	1,412,932	59,509
Rails .....	384,000	345,800
Tin plates.....	354,000	11,592
Pipes and fittings.....	283,500	147,497
Wire .....	92,000	164,200
Sheets and plates.....	755,000	88,300

It concludes: "The figures clearly indicate the leading place which Great Britain occupies as an exporter of iron and steel. Moreover, our exports are increasing absolutely this year at double the American rate of increase."

A new record for two hoists in unloading coal from a lake freighter was made at the head of the lakes on August 19, when after 10 hours' work on the steamer H. S. Sill two Brown hoists on the Northwestern electric dock had taken out 4200 tons of hard coal. The previous best record at the head of the lakes was something around 3200 tons, so that the new record set by the Northwestern dock is about 1000 tons faster than any other.

## The Steel Corporation's Vermillion Mines.

DULUTH, MINN., September 10, 1906.—The mines of the Vermillion range, all operated by the Oliver Iron Mining Company (United States Steel Corporation), will this year make a total shipment of about 1,740,000 tons, or slightly above that of 1905. Of this total shipment 1,000,000 tons come from underground during the shipping season, and the rest from stock piles accumulated since last December. Probably the very best iron shipped to furnaces of the United States Steel Corporation, and that means the best ore mined in North America, comes out of the Zenith mine, at Ely. This is true not only of its iron content but of its structure; less than 2 per cent. of Zenith ore is lump. The ore reserves of this group are very large, and ore from this district may be called the cream of all Lake Superior iron.

The Chandler mine is most easterly of the Ely group, and five shafts have been sunk at the property since Capt. Joseph Sellwood first began its development in 1888. Only one shaft is now open at this mine, and the gradually lessening tonnage will all come from that and an adjacent Pioneer shaft. Chandler mine occupies the easterly pitching, western end, of a great canoe shaped trough or basin, and is cut off by the west line of the Pioneer mine from any enlargement or ore reserves. Its future, therefore is brief and its period of activity definitely calculated. It will be worked out in a very few years. No. 5 shaft, now open, is 843 ft. deep.

At the Pioneer there are two large shafts, of which that known as "B" is a five compartment steel lined steel capped incline, reaching 1057 ft. deep, which is the greatest yet reached in the Vermillion district. Its shaft house is 156 ft. high. Pioneer ore deposits bulge and widen out to enormous size, and at deeper levels are very wide. At this mine all ore is trammed to shaft on the eleventh level and by electric trains, and upper levels are caved as ore is taken out. There is a deeper caving of hard rock above the ore in this mine than anywhere else in the world, and miners in most parts of the country would fail to believe the thickness of jasper that is safely brought down here in the caving operating. Ore is hoisted at this mine at the rate of 1000 ft. per minute and is dumped on grizzlies in the upper part of a head frame, which is arranged to separate hard and soft grades. For years all ore from Pioneer was taken out from pockets of small size found by several small shafts sunk in the jasper, the main ore body not being discovered by the earlier owners. This mine is chief producer of the district, and since its first shipments, in 1889, when only 3144 tons were taken out, it has produced to this date 5,000,000 tons.

### A Coming Great Mine.

One of the most important mines of the Oliver Company is the Zenith, which joins the Pioneer to the east. It has the making of the biggest mine on the Vermillion. Of its two vertical shafts No. 2 is steel lined and 1025 ft. deep. It will be one of the chief hoisting avenues of the district when fully opened, and is situated in the foot wall to the southeast of the main ore formation. Near the center of the base of the Ely trough is a sharp anticline which cuts the Zenith ore body into two, both of them large, and the ore lies between two parallel walls of greenstone, dipping very steeply to the north. In the center of the Zenith anticline the base of altered greenstone, or soap rock, supports directly the jasper capping reaching toward the surface. It is probable that the Zenith ore body connects, west and east, with the Pioneer and Sibley, respectively.

Sibley, Savoy and Silverman, the latter developed merely by a very deep vertical drill hole close to the northwest corner of the east half of the southwest quarter of section 26, form a very important ore deposit, which lies on the east wall of the Ely trough, pitching westerly toward the Zenith, as the Chandler pitches easterly toward the Pioneer. These mines are developed by two active shafts, one of them vertical, the other inclined at only 6.5 degrees from the vertical. This latter is Savoy No. 2, three compartment, with steel head frame 160 ft.

high and 714 ft. deep. Sibley has a three compartment vertical shaft 724 ft. deep. Both these shafts reach merely the upper portions of the mines. At these mines the ore body is 150 ft. wide in places and the condition of the ore, its capping, &c., resemble closely the Chandler and Pioneer at the other end of the same great trough.

### New Work on the Vermillion Range.

An important exploration is soon to begin on the Vermillion range, about a mile southwest of Ely. This will be by Swallow & Hopkins, who have done some work on that range the past few months, and have ample capital to carry on developments. They are grouping three properties, the Anderson, Lucky Boy and Camp, on all of which more or less work was done years ago, and will drill and explore them with great care. These properties lie in the northwest corner of township 62, range 12, in sections 4 and 5, and what ore exists there is not supposed to have any connection with the Ely trough, but to be a separate body, with a northeasterly trend, and the outcrops of Soudan formation and greenstone seem to bear out this supposition. The region is swampy and nearly continuous ridges of greenstone rise from 20 to 30 ft. above the valleys. Most of the pits and trenches in this district show mixed ore and red slate or schistose greenstone. Some of the pits evidently showed good red hematite ore, as there are quantities of this scattered about the surface that came out of these workings years ago.

The first work in this immediate location was done by the Anderson Iron Company in 1890, two years after the discovery of the Chandler mine. The Anderson has a vertical shaft on the north half of the northwest quarter of section 4, put down at that time, together with a number of trenches and pits. These showed very nearly the same indications of ore as were first found at the Chandler, and which resulted in the discovery of the vast deposits of the Ely trough, and its Chandler, Pioneer, Zenith, Sibley and Savoy mines. These indications were first red earth, and then occasional nodules of high grade hard ore and some soft hematite of varying purity. It seems likely that this work was unsuccessful in part because the shaft was located too far south.

More or less work is in progress on other parts of the Vermillion range. One drill has been at work in section 4 T 62 R 13, near the old Southall mine, which is the property of the Oliver Iron Mining Company. This drill is claimed to have cut ore and in a seam of considerable thickness. The White Iron Lake Iron Company, which has been drilling rather continuously for some years on the shores of White Iron Lake, a few miles southeast of Ely, is now sinking a shaft. Operations of the Midland Steel Company, which has taken over the Shagawa Iron Company's option on section 30, 2 miles east of Ely, are now confined, and will be for many months, to sinking and drifting in the search for extensions of the ore bodies already found.

### August Ore Shipments Under July.

As predicted in this correspondence, August shipments showed a falling off as compared with July. For the year to September 1 the total ore traffic of the lakes has been 22,721,095 gross tons. Of this the various ports have shipped as follows:

	Tons.
Duluth (Mesaba range).....	6,584,272
Superior (Mesaba range).....	3,578,496
Two Harbors (Vermillion range).....	1,000,000
Two Harbors (Mesaba range).....	4,161,722
Escanaba (Menominee and Marquette).....	3,436,611
Marquette (Marquette range).....	1,708,937
Ashland (Gogebic range).....	2,251,057
Total.....	22,721,095

The above total is but 1,673,039 tons more than to the corresponding date last year.

### The Supreme Court's Mineral Lease Decision.

The Minnesota Supreme Court has decided adversely to the State Attorney-General, who attempted to find the State's mineral lease law unconstitutional. Mining companies never took his attempt very seriously, and had but little respect for his ability along mining law lines.

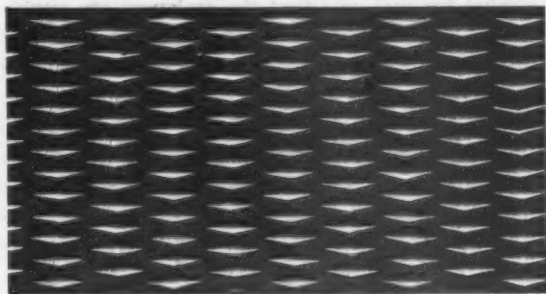
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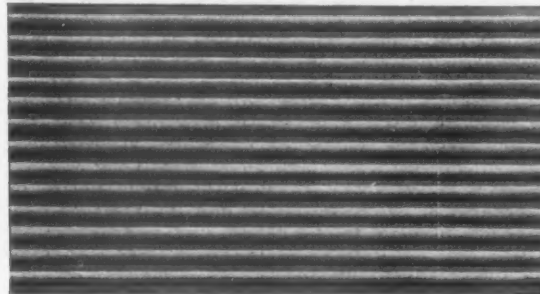
### Sligo Wrought Steel Floor Plates.

The Sligo Iron & Steel Company, House Building, Pittsburgh, Pa., whose mills are at Connellsville, Pa., is manufacturing steel floor plates in the designs which are illustrated herewith. They are intended to take the place of other kinds of floor plates, over which the steel plates possess quite a number of advantages. For instance, it frequently happens in engine, boiler rooms or other places in which heavy machinery is handled that a heavy weight, in dropping, breaks a cast iron plate, causing a serious accident and much loss, which cannot occur with steel plates, as under such circumstances they do not break. The steel plates are also easily cut to desired sizes and shapes, so that the cost of fitting is no more than that of other less desirable material. Again, it is stated that 50 per cent can be saved in weight and the strength still be increased over other materials. Should the steel plates be bent as a result of some accident they can easily be straightened. Further, they can be sheared to shape, saving much work, as compared with the chipping or planing of cast iron plates. For stairway treads in fireproof buildings they are much superior to stone or marble.

The diamond pattern is proving popular with builders and for all structures except ships, in which the ribbed pattern has been most used. The ribbed pattern



Diamond Pattern.



Ribbed Pattern.

Sligo Steel Floor Plates, Rolled from Steel Boiler Plates.

is also largely used for stairway treads. The company offers the diamond pattern in widths running from 24 to 42 in., and the ribbed pattern in widths from 24 to 50 in. All sizes are furnished from 3-16 to 1/2 in. in thickness.

The purposes for which these floor plates are offered are such as floors and steps of buildings, fire rooms, engine and boiler rooms on land or in ships, gutter plates, cellar stairs, fire escapes, locomotive runner boards, car platforms, &c., where strength and lightness are desired.

### The International Steam Pump Company.

The financial statement of the International Steam Pump Company for the fiscal year ended March 31, 1906, has been made public. As compared with the previous year it makes the following showing:

	1905.	1906.	Increase.
Profit from manufacturing and trading.....	\$2,255,212	\$1,617,435	\$637,777
Other income.....	68,177	124,147	*55,970
Total income.....	\$2,323,389	\$1,741,582	\$581,807
Interest, discount, &c.....	128,693	82,276	46,417
Balance.....	\$2,194,696	\$1,659,306	\$535,390
Depreciation.....	344,952	326,371	18,581
Balance.....	\$1,849,744	\$1,332,935	\$516,809
Interest on funded debt, sinking fund and discount....	392,149	334,499	57,650
Balance for dividends..	\$1,457,595	\$998,436	\$459,159
Preferred stock dividends...	709,800	709,800	.....
Dividend on common stock..	.....	306,597	*306,597
Surplus.....	\$747,795	†\$17,961	\$765,756
Previous surplus.....	2,252,032	2,284,993	*32,961
Total surplus.....	\$2,999,827	\$2,267,032	\$732,795
Deduct for plants dismantled for removal.....	970,640	15,000	955,640
P. and L. surplus.....	\$2,029,187	\$2,252,032	*\$222,845

\* Decrease. † Deficit.

President John W. Dunn says: "The year just closed has been one of uninterrupted operations and the output of the various shops has exceeded that of any year since the organization of the company. The orders booked during the year just closed are \$1,275,000 in excess of the previous year, and the unfilled orders on the books of our company on March 31, 1906, amount to \$3,500,000.

"Satisfactory progress has been made in the development of the special lines such as centrifugal and turbine pumps and gas engines, and notwithstanding the increased factory facilities it has been impossible to keep up with the requirements of the trade. There is also an increasing demand for larger units, especially the surface condensers, which has taxed the maximum output of our shops.

"The year just closed marks the first full year of operation of the new Henry R. Worthington plant at Harrison, N. J. This plant was equipped with the best known facilities for the purpose of manufacturing pumping and hydraulic machinery with the greatest economy and efficiency, and the results are already justifying the cost of the expenditure. The production of this plant during the past year was largely in excess of any year in the history of the company.

"At the other plants the principal improvements that have been made during the past year have been for such new tools as were needed to facilitate the manu-

facture of their special lines. Since the organization of the International Steam Pump Company there has been expended \$7,160,000 for new buildings, machinery and tools, as a result of which the production has increased 60 per cent. over the first year of the organization of the company. As the work of concentrating and standardizing our product is carried on to completion it is expected that there will be still larger benefits, not only in increased production but in economy of operation."

As the result of the dismantling and sale of the Brooklyn and Elizabethport plants of Henry R. Worthington, a bookkeeping loss of \$970,639.61 has now been ascertained, and by resolution of the Board of Directors an amount equivalent thereto has been appropriated out of the undivided profits of the company to liquidate this loss. Of this sum \$416,219.04 has been appropriated out of the profits accumulated since the formation of the International Company, the balance having been drawn from the surplus prior thereto. The sale of the main portion of the Brooklyn property does not come into the year's accounts, but the price has been taken into account in ascertaining the above loss. The Lockport plant of the Holly Mfg. Company is now the only dismantled plant in the hands of the associated companies.

Negotiations are under way which may possibly lead to a settlement of the strike of the molders and apprentices in the shops of the Youngstown District. The Youngstown Foundry & Machine Company, the Valley works of the Republic Iron & Steel Company, the Youngstown Furnace & Supply Company and the Girard Foundry Company have signed the scale demanded by the molders, and their shops are in operation. All the others have so far refused to sign, the two largest of these being the Lloyd-Booth Department of the United Engineering & Foundry Company and the William Tod Company.





will hence probably be many inferior qualities on the market and a standardization will be necessary before users can depend upon what they are buying.

### Regulating Machine Tool Prices.

Since the beginning of the agitation to round out the usefulness of the National Machine Tool Builders' Association by providing for a regulation of prices in a falling market, after the same manner that a rising market has been affected by price agreements, various plans have been proposed in a tentative way for accomplishing the desired end. None of them has been rounded out; they are merely suggestions. But they may contain the nucleus of the solution of a problem which is a much more difficult one than that of caring for a rising market, when the temptation to depart from the restrictions of a price agreement is small.

The argument is made that the great difficulty in the way of a price agreement when business slackens is the danger that the agreement would have to follow the fall in prices rather than be a prelude to new conditions; that the initiative would have to be taken in advance of the actual change for the worse, and unless some special provision was made for the calling of a meeting of the National Association to act in the matter before the market had actually slumped concerted action would be difficult to obtain. If a sudden change in the market should occur to-day the association would be helpless in securing unity of action in regulating prices to the new conditions. If signs should begin to point to a falling off in demand no individual manufacturer would be willing to take the initiative in calling a meeting to discuss prices, for his very suggestion would be construed to mean that he himself was contemplating a change in his price schedules and the suspicion might lead his competitors to anticipate him. No one doubts that if the association is to extend its usefulness to the falling market, to act for the common good of its members at a time when the benefit would be exceedingly great, the remedy must be found in advance of its need, while business is at its top notch, and the remedy must be one that shall operate automatically, so to speak, when the occasion requires it.

Without the remedy it is easy to picture conditions as they would exist in a falling off of the demand. The cutting of prices would naturally begin almost immediately. Perhaps a few manufacturers would adhere religiously to their association agreements, and perhaps some dealers would back them up. But the action of some in cutting prices would soon terminate the agreements of all, and the best intentioned would have to follow the leaders. Once started, competition based upon a cutting of prices would quickly go to extremes, as has been done in the past, and prices would get below even the normal level of a poor market. A meeting of the association to take up the matter of prices after the price agreement had been generally broken would actually be to raise prices in many instances in order to put them where they should be and it is doubtful if any sort of agreement would be reached, for distrust and perhaps bad feeling might be revealed.

One suggestion for a remedy is that the association establish a price committee, whose duty it would be to watch the market and immediately upon the arrival of new conditions call a meeting of the association, or perhaps individual meetings of the several sections. Such a body would have to be selected with a good deal of care, that all great interests represented in the association might be included. The East and West should be well

balanced, and each general line of the machine tool business should be recognized in the *personnel*. The idea is that if the signs point to a falling off of business, if prices seem abnormal under conditions as they promise to exist, measures would be taken immediately in order that individual action might be anticipated, or, if already taken, checked at the beginning, before actual harm had been done. The committee might also perform a useful function in taking the initiative toward raising prices to take advantage of an increasing demand, but its chief work would be to guard the trade against a condition of ruinous competition.

Another suggestion, which is interesting though perhaps less practical than the committee idea, is that price agreements be made for limited periods of time. For example, the expected advance in the price of lathes might be for three months instead of indefinitely. The suggestion contains two options. One is that at the end of the period the agreement would become inoperative, requiring a meeting to put it in force again. The objection to this is that if business should continue exceedingly good there would be an inclination to let things go, because there would naturally be no inclination to depart from the agreement schedules. If the agreement made at the May meeting of the association had been for three months it is quite likely that no agreement of any sort would exist to-day, because the time limit would have passed and nothing has arisen to cause the need of an agreement. If, however, to take up the second alternative in the general proposition of a limited time agreement, it had been agreed that at the end of three months a decrease in price of 5 per cent. would go into effect there would probably have been a meeting, or renewal of agreement by correspondence, to avoid a reduction on the part of any member, though as things have turned out there would have been no inclination on the part of any one to take advantage of the terms of such an agreement. The trouble with either of these limited time agreements is that there would always be the chance that a sudden change in the market would occur some time before the end of the agreed period, in which case the association would be no better off than it would be under the present terms of understanding between the members.

These suggestions are interesting, not only in themselves as forming the possible basis for a plan to be adopted by the National Association, but also in showing the interest which is being taken in a most important feature of association work. No one doubts that the whole trade would be benefited greatly if an understanding as to prices should exist when times are dull, in order that disastrous competition might be reduced to a minimum and whatever business there might be would be on the basis of some profit to the manufacturers and not of loss.

### American High Speed Steel.

An erroneous impression is likely to be created by the publication in the Consular Reports of the Department of Commerce and Labor of an article on "Sheffield's Steel Trade." The article is furnished by Consul Charles N. Daniels of Sheffield, who says that the exports of that district to the United States have increased quite considerably during the 18 months ended with June 30, 1906. He points out the interesting fact that steel figures prominently in these increased exports. The value of the steel exports from Sheffield to the United States in the first half of 1905 was \$830,624; last half, \$1,090,771; first half of 1906, \$1,351,284. Mr. Daniel then gives extracts from articles appearing in

the Sheffield newspapers in which the steel requirements of American customers are described as "phenomenal. It is roughly estimated that not less than 100 tons of high speed steel is going to the United States every week." The special point of these quotations from the Sheffield newspapers, however, appears in the following extract:

"The Americans were the first to put this steel on the market and they have allowed the enterprising firms of Sheffield practically to run away with the trade. 'They can't,' says a local maker, 'make high speed steel equal to ours and so we get the trade.'"

Mr. Daniel states that another writer, touching upon the same subject, says:

An interesting theory is current in Sheffield steel circles to explain the reason why United States manufacturers are abstaining from the manufacture of high speed twist drills and are allowing the trade in them to drift to Sheffield; it is that they realize that the general use of such drills would reduce enormously the consumption of drills made of ordinary carbon steel, of which they are the largest producers. United States firms are sending out circulars and advertisements asserting that in the long run the ordinary drills are more economical and satisfactory than the high speed variety.

These statements would be extremely interesting if true. The fact is, however, that American manufacturers of high speed steel are not by any means permitting their competitors on the other side of the Atlantic to run away with this business. Our steel makers state that the demand for this class of steel is increasing to such an extent that it is necessary to make special efforts to meet it. Our largest manufacturers of such steel are doing everything in their power to meet the expanding requirements of their customers, and it is simply because the demand is too great for the home supply that orders are being sent abroad. The claim is further made by our manufacturers that the quality of the high speed steel manufactured in this country is not surpassed, if indeed it is equaled, by the quality of the high speed steel made in Sheffield. The allegation that our manufacturers of high speed steel are allowing the trade in high speed twist drills to drift to Sheffield is ridiculously absurd.

#### Coal Production in 1905.

According to the report of Edward W. Parker, statistician of the United States Geological Survey, the production of coal in the United States in 1905 amounted to 392,919,341 net tons, having a value at the mines of \$476,756,963, surpassing in both quantity and value all previous records in the history of the country. Compared with 1904, the output in 1905 exhibits an increase of 41,102,943 net tons, or over 11 per cent. in quantity, and of \$32,385,942, or over 7 per cent. in value.

Of the total production in 1905, 77,659,850 tons were Pennsylvania anthracite, with a value at the mines of \$141,879,000. The total production of bituminous coal and lignite was 315,259,491 tons, valued at \$334,877,963. The production of anthracite coal in Pennsylvania in 1905 was 4,503,151 tons more than that of 1904, while the increase in the production of bituminous coal and lignite was 36,599,882 tons.

The larger part of the increased production in 1905 is credited to the great activity in the iron industry, as is shown by the fact that the amount of coal made into coke increased from 31,278,573 to 42,412,328 tons, and that the larger increases were in the coking coal producing States and those which furnished fuel to the iron furnaces.

Pilling & Crane, pig iron merchants, Philadelphia, Pittsburgh and New York, are distributing an attractive hanger which gives a graphic presentation of the production of pig iron in the United States from 1830 to 1905. Comparisons are made by decades, except from 1900 to 1905, and heavy black lines are used, the length of the lines being proportioned to the figures.

## Dephosphorization in the Bertrand-Thiel Process.

Oscar Stromborg of the staff of the Colorado Fuel & Iron Company, Pueblo, Colo., has contributed to the *Bulletin* of the Technical and Engineering Society, Colorado School of Mines, Golden, Colo., an article dealing with the Bertrand-Thiel process for steel making. It gives some results of the writer's study of the process at the Kladnow Works, near Prague, Bohemia, and in part covers ground already traversed in articles that have appeared in *The Iron Age*. The more recent of these were in the issue of May 25, 1905, p. 1670, and August 10, 1905, p. 349. We reproduce below the account Mr. Stromborg gives of the operations at Kladnow, as he observed them, and his discussion of dephosphorization as accomplished in the Bertrand-Thiel process:

From what has been said it will be understood that there are very few new or original features about the Bertrand-Thiel process. To decarbonize a molten pig iron bath with ore was successfully performed by Sir William Siemens at his experimental works at Birmingham, England, even earlier than 1868. The advantage of getting rid of the slag produced in the earlier part of the heat has been recognized for a long time. This has been accomplished at several plants by tapping the old slag through a notch in a back door when the charge is about half finished. But the true invention was to find the most suitable mixtures to perform the different operations to the greatest advantage, and to discover phenomena by which to judge how far reactions had proceeded.

By using the operations described it is possible to produce a satisfactory soft material, because what phosphorus is left in the metal from the primary furnace can always be eliminated in the secondary furnace as soon as the carbon is reduced low enough. But if the process is handled with the same attention as it is given at Kladnow it is feasible to reduce the phosphorus to quite a low percentage in the primary furnace—yes, even so low as to allow the heat to be tapped as a high carbon steel without recarbonizing. Here we have an example of the fact that phosphorus can be removed from a steel bath in spite of the presence of a proportion of carbon of more than 1 per cent. This is quite important, not only in practice, but also from a purely theoretical point of view.

#### Dephosphorizing in the Presence of Carbon.

My professor in metallurgy, E. Gson Odelstjerna, expresses the opinion that "it is impossible for any of the degrees of oxidation  $P_2O_3$  or  $P_2O_5$  to remain in existence when coming in contact with free carbon in a molten bath. . . . Therefore it is necessary to decarbonize the charge before we can expect to get rid of the phosphorus." The truth of the first statement cannot be disputed; furthermore, it will be seen that the conditions existing in the Bertrand-Thiel process plainly corroborate the fact. Again, as to the latter part, it should nowadays read: "Nevertheless it is possible under certain conditions to remove the phosphorus from a high carbon bath."

In order to see these conditions as plainly as possible, I will describe a charge in the primary furnace as it is handled at Kladnow. The primary furnace was carefully repaired and a pile of 4000 lb. of ore and 1800 lb. of lime, both in middling sized lumps, was roughly mixed while waiting for the hot metal to arrive from the blast furnaces. The hot metal charged consisted of 26,000 pounds of pig iron. It was brought down in ladles hoisted by a stationary electric crane, and poured into the furnace through a long trough. The metal was quite fluid and at a temperature of about 1400 degrees C. (eye measure). As soon as the whole charge was poured in, they started to charge about 200 to 300 lb. of the mixed ore and lime. This was repeated at short intervals (about 5 min.) until all the ore and lime was charged. Inside of a few minutes quite a violent reaction commenced. The evolution of gases was so violent that the slag looked more like foam than anything else.



and within a half hour it was necessary to build up a dam in the door with ashes or some similar material in order to prevent the slag from running out. All of the mixed ore and lime was charged within 2 hr., at which time the slag cover was so filled with gases that it rose from 6 to 9 in. above the door sill. This foaming continued for about another half hour, when it settled down quite abruptly at the ends and other places where the molten bath was shallow. That was the sign to make everything ready for tapping, and for an expert to watch the phenomena proceeding in the furnace as closely as possible. Now I could notice a few carbonic oxide bubbles around the edges, something which meant that the heat would be ready for tapping at any moment. As soon as the foaming in the center of the furnace showed a tendency to quiet down the tap hole was quickly broken open and the furnace drained.

The analyses of the hot metal used at Kladnow would vary between:

	Per cent.
Carbon .....	3.0 to 3.5
Phosphorus .....	1.5 to 1.6
Manganese .....	0.3 to 0.8
Silicon .....	0.5 to 1.5

The analysis of the metal from the primary furnace was about:

	Per cent.
Carbon .....	1.8 to 2.0
Phosphorus .....	0.1 to 0.3
Manganese .....	0.04 to 0.1
Silicon .....	0.03 to 0.06

In neither of these heats from which I have taken the figures was the phosphorus below 0.1 per cent., and therefore there was no guarantee that I should be able to tap the secondary furnace at about 1.0 per cent. carbon and not over 0.05 per cent. phosphorus. This can be done, besides, successfully in most cases, by having a slag which is very high in oxides, in which case, of course, it is necessary to waste some iron ore. Yet it is pretty hard under these circumstances to tap the heat at the right carbon, because a slag rich in oxides will decarbonize the bath so rapidly as to make it almost impossible to test and tap the furnace within 0.1 per cent. carbon of the amount desired. That it is, however, quite possible to tap a primary furnace with the metal as low as 0.05 phosphorus will be readily understood from the following table of heat No. 117,278 at Kladnow, from which tests were taken every 20 min. both in the primary and secondary furnace.

Table of Conditions in the Primary Furnace.

No. test.	C.	P.	Mn.	Si.
1.....	3.58	1.32	0.36	0.61
2.....	3.60	1.30	0.35	0.36
3.....	3.78	0.93	0.25	0.12
4.....	3.16	0.41	0.09	0.06
5.....	2.77	0.095	0.04	0.02
6.....	2.46	0.056	0.06	0.02
7.....	2.08	0.113	0.05	0.07

At this point the metal was transferred to the secondary furnace, where the tests are as tabulated below:

Table of Conditions in the Secondary Furnace.

No. test.	C.	P.	Mn.	Si.
8.....	0.76	0.053	0.02	0.02
9.....	0.40	0.021	0.03	0.02
10.....	0.29	0.011	0.04	0.02
11.....	0.41	0.013	0.34	0.02
12.....	0.36	0.022	0.29	0.02
13.....	0.40	0.011	0.22	0.02

At this point the metal was tapped. The irregularity in carbon and manganese in test No. 11 resulted from the charging of 500 pounds of spiegel. The high carbon in test No. 3 must have resulted either from a current in the bath or an error in the laboratory.

From the tests taken in the secondary furnace it will also be understood that it would have been possible to tap the heat from the secondary furnace at 0.75 per cent. carbon and 0.053 per cent. phosphorus, had they used ferromanganese instead of spiegel and charged it into the ladle instead of into the furnace.

The column of highest interest is nevertheless the phosphorus column in the primary furnace. The first test shows 1.32 per cent. phosphorus, and from that point on is a steady decrease until test No. 6, where it

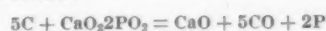
shows 0.056, the lowest recorded in the heat. Whether the percentage ever had been lower immediately before or after the test was taken cannot be settled. However, test No. 7 shows a phosphorus increase to 0.113 per cent., and had the metal been left in the furnace longer the next test would have undoubtedly shown yet higher percentages of phosphorus, as I have seen that result recorded for other heats.

#### The Elimination of Phosphorus Explained.

At this point the question comes up: "How do you explain the dephosphorization in the Bertrand-Thiel process?" As I understand that phenomenon, the first necessity is a very liquid slag; second, that the slag must be very rich in substances that either give off or produce gases in such quantities that the slag cover rests on gases, so to speak; and third, the slag must also contain easily accessible oxygen in such quantities as to satisfy all demands of the phosphorus in the iron, and also of what carbon may be present when the oxidation of the phosphorus is completed.

If one could look at a section through the slag cover and bath I think he would describe a layer immediately above the metal bath as extremely porous—a mass of small bubbles with thin walls, crowded as closely together as possible. On account of the shape of these bubbles this layer will be penetrated at all parts by small strings of slag. Every one of these filaments must be so rich in easily accessible oxygen that it can quickly oxidize what phosphorus it might come in contact with and yet have enough left to meet the demands of carbon perhaps present. If this is the case, the observer will find in the next moment a few molecules of  $\text{CaO}_2\text{PO}_2$ —( $\text{CaO P}_2\text{O}_5$ )—mixed into that string of slag; and as soon as the oxygen can react upon the carbon it will produce a new little bubble of carbon monoxide or dioxide at the point of contact and thus lift the phosphorus laden slag from the dangerous presence of other molecules of free carbon which may momentarily appear at the point of contact.

When these bubbles of CO or  $\text{CO}_2$  are produced at the point of contact it is quite vital that the slag be quite fluid in order that the old slag can be easily carried off. If we consider that we have a thick, sluggish slag, then bubbles would just push the string over to one side. The next moment the point of the string would be attacked by fresh molecules of carbon, and as the content of oxygen in  $\text{FeO}$  or  $\text{Fe}_2\text{O}_3$  was disposed of before, the free carbon will attack the oxidized phosphorus and the following reaction will ensue:



The free phosphorus is again dissolved in the iron and the carbonic oxide passes off as a gas.

The foreman at Kladnow said it was impossible to get any result with a thick slag in the primary furnace. Mr. Bertrand, in personal correspondence with H. H. Campbell, explained that it is possible to reach as low as 0.005 per cent. phosphorus if he had 2 per cent. Mn in the pig iron used, and he considered the reason for the better result to be due to the improved fluidity of the slag received.

There is undoubtedly a continuous oxidation and reduction of phosphorus going on in contact points between slag and iron, but it seems that phosphorus should be by far the quicker in taking up oxygen. Otherwise we would never get the result we do if we take into consideration the fact that carbon seems to have considerably stronger affinity for oxygen at those high temperatures.

But whatever the reason for the above described dephosphorization might be, the Bertrand-Thiel process has thoroughly proved that if properly handled it can completely master this impurity that has through all ages proven to be the most commonly appearing, the hardest to remove, and the most dangerous to allow to remain in the greater part of the different irons and steels in use.

The Bureau of Navigation, Washington, reports 105 sail and steam vessels of 35,221 gross tons built in the United States during the month of August.

## Interstate Commerce Complaints.

### Course of Procedure to Be Followed.

WASHINGTON, D. C., September 11, 1906.—How complaints concerning unreasonable freight charges or discriminations against shippers or localities may be most expeditiously brought to the attention of the Interstate Commerce Commission and redress secured under the new freight rate law, which took effect August 28, is an inquiry that is daily being made at the commission's headquarters in this city.

#### Who May File Complaint.

Under the rules of practice adopted by the commission "any person, firm, company, corporation or association, mercantile, agricultural or manufacturing society, body politic or municipal organization, or the railroad commissioner or commission of any State or Territory may complain to the commission by petition of anything done or omitted to be done, in violation of the provisions of the act to regulate commerce by any common carrier or carriers subject to the provisions of said act." Where a complaint relates to the rates or practice of a single carrier no other carrier need be made a party to the proceeding, but if it relates to matters in which two or more carriers engaged in transportation by continuous carriage or shipment are interested, the several carriers may be made joint defendants in a single petition. In many cases, however, it will not be necessary to go so far as to file a formal petition, and it is an interesting fact that during the period since the commission was first organized more than one-half the complaints received have been settled satisfactorily to the complainant as the result of correspondence and without the formality of a hearing.

#### Informal Complaints.

The first step to be taken by any one having a complaint of any kind to make to the commission is to address a letter to Hon. Martin A. Knapp, chairman, stating as briefly as possible the specific grounds of the complaint, whether the freight rate or the classification is the basis of the grievance and showing by comparison with other rates the discrimination against the individual or locality. As soon as this statement is received by the commission it will be referred to the auditor, who keeps a complete set of the freight tariff schedules of all the common carriers throughout the country, and he will check up the rates quoted in the complaint and make a report to the commission regarding the justness of the charges against the carrier in question. A summary of the complaint, together with a copy of the auditor's report, will then be served by the commission upon the defendant carrier, and a copy of the auditor's report will also be forwarded to the complainant.

In a majority of cases the carriers, upon receipt of the complaint and the auditor's report, promptly suggest to the commission an adjustment of the rate or classification complained of, and if this adjustment is approved by the commission the complainant is usually advised to accept it and the case is thus closed. It will be noted that in all such cases the expense to the complainant is limited to the time and labor of writing a letter or two. There is no fee for filing the complaint with the commission.

#### Form of Petition.

In the event, however, that the answer of the carrier to the informal complaint is not satisfactory to the commission the complainant is notified to that effect, and if the commission regards the grievance as well founded the shipper is requested to file a formal petition. This petition need not be drawn by a lawyer, but may be prepared by the shipper in accordance with the following form:

A. B.  
against  
THE ——— RAILROAD COMPANY.

The petition of the above named complainant respectfully shows:

I. That (here let complainant state his occupation and place of business).

II. That the defendant above named is a common carrier engaged in the transportation of passengers and property by railroad between points in the State of ——— and points in the State of ———, and as such common carrier is subject to the provision of the act to regulate commerce, approved February 4, 1887, and acts amendatory thereof or supplementary thereto.

III. That (here state concisely the matters intended to be complained of. Continue numbering each succeeding paragraph as in Nos. I, II and III).

Wherefore the petitioner prays that the defendant may be required to answer the charges herein, and that after due hearing and investigation an order be made commanding the defendant to cease and desist from said violations of the act to regulate commerce, and for such other and further order as the commission may deem necessary in the premises. (The prayer may be varied so as to ask also for the ascertainment of lawful rates or practices and an order requiring the carrier to conform thereto. If reparation for any wrong or injury be desired, the petitioner should state the nature and extent of the reparation he deems proper.)

Dated at ———, ———, 190—.

A. B.

(Complainant's signature.)

In case the complainant is in doubt as to his ability to draft a petition in proper form he is at liberty to apply to the commission, stating any pertinent facts not included in his original complaint, whereupon the secretary of the commission will draw the petition and forward it for the complainant's signature. A copy of the petition is then served upon the defendant carrier, who is granted 20 days in which to file a formal answer. Upon receipt of the carrier's response the issue is joined and the commission will proceed to assign a time and place for hearing the case. Oral hearings usually take place at the commission offices in Washington, but the testimony of any witness may be taken by deposition at the place of his residence, before any court official or notary authorized to administer an oath. Reasonable notice must be given in writing by the party, or his attorney, proposing to take such deposition to the opposite party, or his attorney of record, stating the name of the witness and the time and place of the taking of the deposition. The object of this notice is to permit the opposite party, either in person or by his attorney, to be present at the taking of the deposition for the purpose of cross-examining the witness. The complainant is thus enabled to file his formal petition with the commission and to submit his evidence in support thereof without leaving his place of residence; but of course he may find it desirable, either personally or by attorney, to be present at the taking of the depositions of the defendant carrier, which may be taken at the latter's general offices in another city.

After all the testimony in the case has been taken, either orally or by deposition, both parties may file briefs if they desire or if called upon to do so by the commission. When this has been done the case is taken up by the commission and considered until decided.

#### Facts to Be Proved.

It should be borne in mind that under the rules of the commission the complainant must in all cases establish the facts alleged to constitute a violation of the law, unless the carrier complained against admits the same or fails to answer the petition. The carrier must also prove the facts alleged in the answer unless admitted by the petitioner, and must fully disclose its defense at the hearing. Evidence in rebuttal, either oral or by deposition, may be submitted by either party under the same conditions governing evidence in chief. In case of failure to answer on the part of the defendant carrier the commission will take such proof of the facts as may be deemed proper and reasonable, and make such order thereon as the circumstances of the case require.

While the Interstate Commerce Commission sits as a court to try cases presented to it in accordance with the rules of practice above set forth, it maintains an office staff whose duties require them to assist all complainants in properly presenting their cases. In some instances the commission assigns its own special agents to investigate the allegations of complainants, and it will thus be seen that while every effort is made to deal out equal justice to all parties the humblest retail merchant in the country is accorded the same degree of consideration by this important tribunal as is granted the greatest railroad corporation.

W. I. C.



## PERSONAL.

Howard E. Troutman, for over ten years connected with the Buckeye Engine Company and for several years manager of its Chicago office, has resigned to accept the sales management of the Corliss and high speed engine department of the Atlas Engine Works, Indianapolis, Ind. Mr. Troutman's headquarters will be at the home office.

J. M. Broucher of the Brownell Company, Dayton, Ohio, has resigned his connection with that company to accept the position of assistant general managership of sales for the Atlas Engine Works, Indianapolis, Ind.

Thomas B. Arnold, until recently with the Railway Steel Spring Company, has been appointed Southwestern representative for the Detroit Seamless Tubes Company, Detroit, Mich., maker of the Detroit locomotive flue. His headquarters will be in St. Louis.

F. B. Huntington has been appointed comptroller of the Chicago Terminal Transfer Railroad Company, Chicago, vice S. L. Prest, resigned to accept service elsewhere.

Edwin N. Ohl, vice-president of the Cherry Valley Iron Company, Pittsburgh, has returned from Europe.

Thomas James, for many years master mechanic of the Edgar Thomson Works of the Carnegie Steel Company, has resigned and has been placed on the retired list. He went to the Edgar Thomson Works in 1873 with the late Capt. William R. Jones. He has been succeeded by John Richardson.

George Mesta, president of the Mesta Machine Company, Pittsburgh, has returned from Europe.

A. D. McAdam has resigned as local auditor at Detroit of the American Car & Foundry Company to become manager of sales of the Michigan Malleable Iron Company, Detroit, Mich.

E. S. Orr has been appointed superintendent of the Sharon furnace of the Carnegie Steel Company at Sharon, Pa., to succeed Albert Kromlish, who has been made superintendent of the two blast furnaces of the Carnegie Steel Company at Donora, Pa.

## OBITUARY.

CAMILLE MERCARDER, assistant to the president of the Carnegie Steel Company, died September 7 at St. Joseph's Hospital, Philadelphia, of an operation to remove a blood clot from the brain. He had been ill for about three months. Mr. Mercarder, who was known as Count Mercarder, was a native of Hungary and about 45 years old. He received a thorough technical education in German engineering schools and was considered a brilliant engineer. He came to the United States in 1889 and for a short time engaged in the bridge business in Chicago. When he removed to Pittsburgh he was made assistant to Charles M. Schwab, and during his connection with the Carnegie Steel Company he invented a number of labor saving devices used in plate and structural mills, and had much to do with the development of the steel forged car axle now made on an extensive scale at the Howard axle works of the Carnegie Steel Company. He was a member of the German Technical Society of Western Pennsylvania, the Engineers' Society of Western Pennsylvania, the Iron and Steel Institute of Great Britain and the Union Club of Pittsburgh. He was a director of the German Club of Pittsburgh, and was always a prominent figure when foreign engineers were visitors to Pittsburgh. He was unmarried. The remains have been shipped to his former home in Hungary.

CARL LUCKMANN, manager and director of the Krainische Industrie Gesellschaft of Assling-Huetten, Krain, Austria, died July 24. Mr. Luckmann rendered notable services to the steel trade in Austria, having practically been the founder of that trade in the southern part of that country. His labors in connection with the development of the steel industry in Austria, his foresight and perseverance during the time when all his colleagues wished to abandon the manufacture of steel in

Carniola, were recognized and rewarded, as at the time of his death he was Knight of the Iron Crown and of the Order of Francis Joseph, member of the Austrian House of Representatives, member of the Board of Directors of the Lower Carniola Railway, member of the State Railway Council and of the Chamber of Commerce for Carniola, Honorary Citizen of Assling, Neu-marktl and Veldes, &c.

PAUL DICKINSON, president of the Paul Dickinson Iron & Locomotive Works, Chicago, died September 1, aged 39 years. He had been ill for over a year. He was born in Milwaukee, but went to Chicago while a boy. After going through a foundry training he became a partner in the firm of Turner & Dickinson. Some years ago Mr. Dickinson bought out his partners. He leaves a widow and a daughter.

## Proposed Fire Brick Consolidation Not Accomplished.

For some months a movement has been under way in Pittsburgh to consolidate the different independent fire brick manufacturers into one company. Options were secured some time ago from leading concerns, and last week a meeting was held in the offices of A. M. Neeper, attorney, in the Frick Building. Among the companies having representatives present were the following:

Reese-Hammond Fire Brick Company, Bolivar, Pa.  
 Jos. Solson Fire Brick Company, Connellsville, Pa.  
 Ashland Fire Brick Company, Ashland, Ky.  
 W. H. Wynn & Co., West Decatur, Pa.  
 Sandy Ridge Fire Brick Company, Sandy Ridge, Pa.  
 Renova Fire Brick & Clay Works, Renova, Pa.  
 Climax Fire Brick Company, Climax, Pa.  
 Elk Fire Brick Company, St. Mary's, Pa.  
 Gardner Bros., Cumberland, Md.  
 Dunbar Fire Brick Company, Dunbar, Pa.  
 Savage Fire Brick Company, Mount Union, Pa.  
 Garfield Fire Clay Company, Robinson, Pa.  
 West Branch Fire Brick Company, Renova, Pa.  
 Davis Fire Brick Company, Oak Hill, Ohio.  
 Ohio Fire Brick Company, Oak Hill, Ohio.  
 Welch Fire Brick Company, Monaca, Pa.  
 Scioto Fire Brick Company, Sciotoville, Ohio.  
 Dover Fire Brick Company, Cleveland, Ohio.  
 Sharon Fire Brick Works, Sharon, Pa.  
 Chicago Retort & Fire Brick Company, Chicago.  
 Lincoln Fire Brick & Shape Company, Lockport, Pa.  
 Burns Fire Brick Company, Williamsport, Pa.  
 Stuart Fire Brick Company, Pittsburgh.  
 Welch, Gloninger & Maxwell, Pittsburgh.  
 Stowe-Fuller Company, Cleveland, Ohio.  
 Eureka Fire Brick Works, Mt. Braddock, Pa.  
 Savage Mountain Fire Brick Company, Frostburg, Md.  
 Buckeye Fire Brick & Clay Company, Scioto Furnace, Ohio.  
 Brighton Fire Brick Company, New Brighton, Pa.  
 S. Barnes & Co., Rochester, Pa.  
 Osceola Silica & Fire Brick Company, Osceola Mills, Pa.  
 Hays Run Fire Brick Company, Orvis, Pa.  
 Big Savage Fire Brick Company, Frostburg, Md.  
 Apollo Silica Brick Company, Apollo, Pa.  
 Gleasonston Fire Brick Company, Gleasonston, Pa.  
 Petersburg Fire Brick & Tile Company, Coal Grove, Ohio.  
 Piedmont Brick & Coal Company, Piedmont, W. Va.  
 Oak Hill Fire Brick & Coal Company, Oak Hill, Ohio.

When valuations placed on some of the plants were given out they were very seriously objected to as being so high that it would be impossible to effect a consolidation under the proposed capitalization of \$25,000,000. After a full discussion it was decided to extend the time of the option to November 1, with the understanding that a number of concerns would materially reduce figures given in their options or else the proposed consolidation could not be effected.

An electrically operated rolling mill at the Queensferry (England) steel works is a three-high mill, with roughing and finishing rolls for bars. The main shaft carries a 15-ton flywheel grooved to receive a rope drive from a 275 hp. 400-volt compound wound motor. When running light at full speed the current consumption is 80 amperes. When a billet 6 in. square is put into the mill the current jumps momentarily to 550 amperes, but drops back to 200 as soon as the flywheel takes the load. On the final passage for finishing the bar such fluctuations are not in evidence.

## A Further Decline in Pig Iron Production.

### The Steel Companies the Sufferers.

The striking feature in connection with the August returns of the production of the blast furnaces is that the make was not up to the expectations, based upon the records of the months immediately preceding it, upon which the estimates of capacity at work are based. The total output for August, a month of 31 days, was only 1,922,717 gross tons, which compares with 2,013,402 tons in July, also a month of 31 days. This is due to the steel companies' plants almost entirely, whose output fell off 85,906 tons, while the merchant furnaces declined only 4729 tons. A study of the details shows that in a very large number of cases the production of the same furnaces was considerably less in August than it was in July. It does not seem likely that a full output will be reached until next month.

The following table gives the production of the coke and anthracite furnaces in August, as compared with the records for the preceding four months:

Monthly Pig Iron Production.—Gross Tons.

	April. (30 days)	May. (31 days)	June. (30 days)	July. (31 days)	August. (31 days)
New York....	127,674	134,048	129,834	141,885	138,697
New Jersey..	33,742	35,973	32,858	34,814	35,058
Lehigh Valley.	56,718	53,613	49,704	51,761	51,979
Schuylkill Val.	52,492	48,760	56,921	52,751	47,940
Lower Susquehanna and Lebanon Val.	61,831	57,951	60,219	61,132	64,145
Pittsburgh dis.	498,874	509,777	487,900	505,570	457,002
Shenango Val.	172,342	176,913	157,313	150,116	133,984
West. Penn..	105,190	112,985	100,505	103,733	94,874
Md., Va and Kentucky....	75,030	77,069	75,016	73,888	80,147
Wheeling dis..	113,188	104,109	93,618	101,573	107,526
Mahoning Val.	163,010	147,433	149,943	161,073	136,415
Central and North. Ohio.	163,152	168,672	149,944	147,162	155,455
Hocking Valley and Hanging Rock .....	33,940	36,103	33,559	31,643	34,276
Ill., Mich., Minn., Wis., Mo. and Colo. ....	240,043	255,256	236,528	232,954	218,725
Alabama.....	137,049	137,790	124,606	127,165	127,137
Tennessee, No. Caro., Texas and Georgia.	38,938	42,294	38,265	36,182	39,357
Totals.....	2,073,222	2,098,746	1,976,733	2,013,402	1,922,717

This does not include the production of the charcoal furnaces, which during the first half of this year averaged 34,500 tons per month.

**Production of Steel Companies.**—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of products month by month. We present also separately monthly figures of the production of spiegeleisen and ferromanganese, which is included in the total:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.					Spiegeleisen and ferromanganese.	
	1904.	1905.	1906.	1905.	1906.		
January .....	502,994	1,129,042	1,358,015	21,002	26,305		
February .....	756,260	1,027,937	1,226,760	22,431	26,988		
March .....	913,412	1,232,255	1,400,395	21,280	23,595		
April .....	974,006	1,222,710	1,333,591	20,038	28,054		
May .....	927,534	1,287,438	1,372,423	24,732	29,447		
June .....	788,882	1,149,404	1,293,437	21,761	22,737		
July .....	694,892	1,114,409	1,323,391	31,220	20,153		
August .....	747,570	1,186,050	1,237,485	27,461	18,327		
September .....	936,494	1,262,033		21,645			
October .....	971,447	1,370,960		26,799			
November .....	962,384	1,334,644		23,776			
December .....	1,019,841	1,356,962		29,481			

There were blown out, during August, Franklin, in New York, one Carrie in Pittsburgh, Earlston and Punxy in western Pennsylvania, one La Belle in the Wheeling District, one of the National Tube Company's furnaces at Lorain, Ohio; one Calumet at Chicago, one of the Ohio Steel Company's furnaces at Youngstown, and the Missouri

furnace. Work was resumed by Leesport in the Schuylkill valley, one Edgar Thomson in Pittsburgh, Adrian in western Pennsylvania, Allegheny and Ivanhoe in Virginia, one Bellaire in the Wheeling District, one Columbus in Ohio, one Wellston, one new Illinois furnace at Joliet, Tod in the Mahoning valley, one Bessemer and one Ensley in Alabama, and Embree in Tennessee. The new Midland in the Pittsburgh District blew in last week. The table below gives the active capacity per week of furnaces producing coke and anthracite iron on September 1 and August 1, 1906:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number in blast.	Capacity per week.
Buffalo .....	13	13	26,880	13	27,349
Other New York...	10	4	3,929	5	4,816
New Jersey.....	8	7	7,886	7	7,702
Spiegel .....	2	1	160	1	161
Pennsylvania:					
Lehigh Valley....	27	18	11,440	18	11,533
Spiegel .....	2	2	300	2	154
Schuylkill Valley...	13	12	11,230	11	11,914
Low Susquehanna..	8	5	6,512	4	5,850
Spiegel .....	2	1	627	1	680
Lebanon Valley....	11	10	7,571	10	7,315
Pittsburgh district.	41	38	100,688	38	107,858
Spiegel .....	3	3	2,506	3	2,712
Shenango Valley...	20	16	30,263	16	31,248
West. Penn.....	24	16	20,032	17	22,183
Maryland .....	5	3	5,984	3	6,244
Wheeling district...	14	13	23,481	13	25,002
Ohio:					
Mahoning Valley...	16	14	31,724	14	34,372
Cent. and Northern.	20	19	36,083	18	34,850
Hocking Valley, Hanging Rock...	12	12	7,749	11	7,458
Illinois .....	21	20	40,441	18	38,527
Spiegel .....	3	1	550	1	842
Minnesota .....	1	1	1,028	1	1,146
Wisconsin .....	5	5	5,020	5	5,082
Missouri .....	1	0	0	1	775
Colorado .....	4	4	6,161	4	5,649
Spiegel .....	1	0	0	0	0
The South:					
Virginia .....	23	14	10,426	12	8,647
Kentucky .....	7	3	2,437	3	2,145
Alabama .....	46	28	31,125	26	28,714
Tennessee .....	18	16	7,893	15	7,704
Georgia and Texas.	2	2	1,300	2	1,276
North Carolina....	1	0	0	0	0
Totals.....	384	301	441,426	293	449,908

For a series of months the active coke and anthracite capacity fluctuated as follows, in gross tons:

	Capacity per week.		Capacity per week.
September 1.....	441,426	April 1.....	337,257
August 1.....	449,908	March 1.....	308,751
July 1.....	460,570	February 1.....	273,692
June 1.....	472,622	January 1, 1904.....	185,686
May 1.....	484,031	December 1, 1903.....	244,156
April 1.....	484,240	November 1.....	273,715
March 1.....	479,737	October 1.....	353,142
February 1.....	482,156	September 1.....	360,197
January 1, 1906.....	463,673	August 1.....	353,681
December 1, 1905.....	475,814	July 1.....	384,825
November 1.....	460,449	June 1.....	388,178
October 1.....	445,468	May 1.....	373,496
September 1.....	412,563	April 1.....	386,215
August 1.....	410,088	March 1.....	347,424
July 1.....	408,617	February 1.....	335,239
June 1.....	443,092	January 1, 1903.....	346,073
May 1.....	452,031	December 1, 1902.....	336,617
April 1.....	439,564	November 1.....	330,110
March 1.....	403,157	October 1.....	337,837
February 1.....	405,792	September 1.....	328,243
January 1, 1905.....	377,879	August 1.....	328,745
December 1, 1904.....	357,846	July 1.....	303,793
November 1.....	334,249	June 1.....	337,492
October 1.....	319,249	May 1.....	337,627
September 1.....	291,573	April 1.....	331,140
August 1.....	246,092	March 1.....	316,039
July 1.....	272,301	February 1.....	325,440
June 1.....	336,107	January 1, 1902.....	291,992
May 1.....	368,244		

Bar silver the past week touched 31½d. in London and 68½ cents here, the continued rise being due to Indian buying. There has been purchased about 50,000,000 ounces more silver for India thus far than was purchased last year. The London price named is the highest quotation recorded since 1896, 10 years ago. The higher prices for silver will be of particular benefit to the silver producing countries.



## NEWS OF THE WORKS.

## Iron and Steel.

The new universal plate mill of the Youngstown Sheet & Tube Company at Youngstown, Ohio, is expected to be started up on Monday, September 17. This is a 42-in. mill, built by Mackintosh, Hemphill & Co., Pittsburgh, and will roll plates up to 42 in. wide with the vertical rolls in, and by removing the vertical rolls plates up to 66 in. wide can be rolled. The mill is driven by a 44 x 60 in. Mesta twin reversing engine, built by the Mesta Machine Company, Pittsburgh.

Tod Furnace of the Youngstown Steel Company, at Youngstown, Ohio, which has been idle for some time for repairs, was blown in on August 30.

Ella Furnace, at Trussville, Ala., will be blown in about September 15.

The Missouri Furnace of the St. Louis Blast Furnace Company, St. Louis, Mo., was blown out on August 27.

The Ontario Iron & Steel Company, whose present address is at Guelph, Ont., has let contract to the Berlin Construction Company, Berlin, Conn., for the erection of its new plant at Welland. The amount of the contract is \$265,000. The company is to manufacture steel plates, bars, angles and rails.

Punxy Furnace of the Punxsutawney Iron & Steel Company, Punxsutawney, Pa., was blown out August 24.

The La Belle Iron Works, Steubenville, Ohio, blew out its La Belle Furnace No. 2 on August 30.

The Allegheny Ore & Iron Company, Clifton Forge, Va., blew in its Allegheny Furnace on August 22, and expects to blow in its Gem Furnace about October 1.

Calumet Furnace of the South Chicago Furnace Company, Chicago, was blown out August 8.

One Ohio furnace of the Carnegie Steel Company was blown out August 8.

The Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., blew in the No. 5 Bessemer Furnace August 24 and its Ensley Furnace, No. 5, on August 15.

Embree Furnace of the Embree Iron Company, Embreeville, Tenn., was blown in on August 18.

Some changes have taken place in the organization of the Pennsylvania Swedish Iron Company, Cheswick, Pa. The Pittsburgh office and agency have been abandoned and all business will be conducted at the works. Ambrose Beard, vice-president, will have charge of the commercial and operating departments. Some new equipment has been added to the works recently and the company is now prepared to make prompt shipments of charcoal iron blooms at the rate of 25 tons per day, the blooms being rolled in sizes 4 x 4 in. up to 8 x 8 in., and in weights of 100 to 400 lb. Slabs are rolled 3 in. thick and upward, weighing not over 400 lb.

The South Chester Tube Company's mill, Chester, Pa., has been placed in operation after several months' idleness. The company is now working on a large order for 12-in. pipe, and it is understood that this contract alone will keep the mill running for several months.

Adrian Furnace of the Rochester & Pittsburgh Coal & Iron Company, Du Bois, Pa., blown out on July 23 for relining and repairs, resumed blast on August 31.

Mattie Furnace of the Girard Iron Company, Girard, Ohio, is now out of blast for relining and repairs, but is expected to blow in on October 1.

No. 4 stack of the Shenango Furnace Company, Sharpsville, Pa., is idle for relining and repairs, but is expected in about October 15.

Claire Furnace of M. A. Hanna & Co., at Sharpsville, Pa., is idle for relining and repairs, but will resume blast about October 1.

Atlantic Furnace of the Republic Iron & Steel Company at New Castle, Pa., is being relined and extensively repaired, and will be ready for blast about October 1. This stack is expected to make about 350 tons of iron per day.

The new blast furnace of the Midland Steel Company at Midland, Pa., which has been under erection for nearly a year, was blown in last week. The stack is 20 x 85 ft., and is expected to make about 400 tons a day. It will run on basic iron for the present.

## General Machinery.

The Buffalo Forge Company, Buffalo, N. Y., has recently closed a large contract with the Bethlehem Steel Company for forced draft equipment, consisting of six fans and engines, direct connected, to drive the same. There is included in the contract provision for complete accessories in the line of dampers, speed regulating valves, piping, ducts, &c. The Philadelphia & Reading Railroad has just placed an order for heating and ventilating equipment for use in the additions it is making to its machine and boiler shops. The contract awarded to the Buffalo Forge Company includes six large fans, heaters, tempering coils, piping, &c. The heaters are arranged for use with atmospheric pressure steam in connection with the Warren

Webster vacuum system. The fans are to be belt driven from electric motors. The company reports an increasing business in Japanese export trade, and has recently closed a contract with Mitsui & Co. for 36 extra heavy smith shop forges, 17 large railroad forges and 5 two-section heating furnaces.

The W. S. Tyler Wire Company, Cleveland, Ohio, is erecting a large addition which will be used as a machine shop. Some new machinery will be installed. George S. Ryder & Co. are engineers for the new plant.

The Alliance Machine Company, Alliance, Ohio, recently secured one of the largest orders for cranes ever placed, for the new Garry, Ind., plant of the United States Steel Corporation. It is understood that the contract aggregates nearly \$400,000.

Baker Brothers, Toledo, Ohio, are experiencing a wonderful demand for their cylinder boring machines for automobile work. Orders are coming not only from numerous manufacturers in this country, but a number of these tools are being shipped to automobile makers in Italy.

The Woods Engineering Company, Alliance, Ohio, has been formed, with F. C. Woods, president and general manager; W. C. Brown, chief engineer, and F. A. Hobbs, superintendent. The company is erecting a factory and will make automobile parts and build and repair machinery of various kinds.

The Balance Cable Crane Company has been organized with a capital stock of \$1,000,000 to manufacture and install balanced cranes and cableways, under patents owned by W. F. Brothers. The company has offices in the Royal Building, William and Fulton streets, New York, and the Board of Directors includes Mr. Brothers, Max Schultz, H. G. Able, Otto C. Heinze and L. Martin, who is treasurer of the company.

The Western Machine Works, Chicago, has incorporated, with a capital stock of \$2500. Harry Vanderpool, Ferdinand Kouba and Andrew Rost, Jr., are the incorporators.

The Fitz-Hugh, Luther Company, Chicago, Ill., manufacturer of railroad equipment, has placed a contract for the construction of a new car shop at its plant at Hammond, Ind. The building will be of brick.

A party of officials of the Texas & Pacific Railroad has been in the neighborhood of Baton Rouge Junction, La., recently investigating a 75-acre tract of land as a possible site for its machine shops, now located at Gouldsboro, near New Orleans.

The Ransome & Smith Company, New York, has closed a contract with the Coe Brass Mfg. Company, Torrington, Conn., for the construction of a new 50 x 140 ft. three-story machine shop and 50 x 140 ft. two-story blacksmith shop, to be built of reinforced concrete throughout.

The De La Vergne Machine Company, New York, is building an addition to its plant which will be used as a blacksmith shop, for which the necessary machinery has been secured.

## Power Plant Equipment.

The Winchester & Washington City Railway Company, Winchester, Va., is developing a 3000-hp. hydraulic plant with the intention of supplying electricity to Winchester and Berryville, Va., and Charles Town, W. Va. Later on the company will probably construct an electric railroad.

The Crescent Rotary Engine Company, Spokane, Wash., is preparing for the erection of a \$100,000 plant to be erected east of the city for the manufacture of rotary engines under patents owned by H. I. Call. The company has a small engine now in operation at its plant.

The Mesta Machine Company, Pittsburgh, Pa., has just sold through its Southern agents, Shook & Fletcher, Birmingham, Ala., one 44 and 84 x 60 in. long crosshead blowing engine to the Chattanooga Iron & Coal Company, Chattanooga, Tenn.

The Kentucky Electric Company, Louisville, Ky., has been incorporated with a capital stock of \$500,000, and will supply light, heat and power. The company will proceed as rapidly as possible to build a complete power house and to install a complete system of underground distribution, and will be in the market for all of the equipment necessary for the work. Officers of the company are Donald McDonald, president; Lawrence Jones, first vice-president; Chas. J. Doherty, second vice-president, and Bryan H. Allen, secretary.

The Borough of Kutztown, Pa., after operating a municipal lighting plant for some time, is increasing its capacity by the installation of a 125-hp. Hornsby-Akroyd oil engine. The present plant consists of a 65-hp. Hornsby-Akroyd oil engine belted to generator. Both engines were supplied by the De La Vergne Machine Company, New York.

Jacksonville, Fla., will receive bids until October 4 for one 8,000,000-gal. horizontal compound or triple expansion condensing engine for the water works. For specifications apply to R. L. Ellis, superintendent.

The David Wigert Boiler Works, Galesburg, Ill., has opened a shop to manufacture its improved water grate down draft boiler for house heating purposes, which was fully described in *The Iron Age* of October 26, 1905. It is the intention of the company to incorporate with increased capital later on and to take up the manufacture of high pressure as well as low pressure boilers. Associated with Mr. Wigert is B. F. Butler.

The Wolverine Supply & Mfg. Company, Pittsburgh, has applied for a charter. The company will manufacture gas engines, generators, motors and air pumps.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has acquired the factory and patents of the Tungsten lamps, now manufactured in Europe. The feature of the new lamp is the Tungsten metal filament.

The Reading Oil & Gas Engine Company, Reading, Pa., capitalized at \$200,000, has a small plant at 104 Court street, where it is developing an engine to be operated by coal oil, the invention of A. S. Losch. Two of the new type of engines are finished and in operation at the plant with satisfactory results. The company is preparing to erect a larger plant, and within the next six months expects to place the engine on the market. It is claimed that this engine solves the problem of using heavy oil in explosive engines, and that the engine runs just as well on wood alcohol as on oil, the combustion in both cases being about perfect. George B. Gerber is president, McHenry Wilhelm secretary, and Francis Keiser treasurer.

#### Foundries.

The Plattsburg Foundry & Machine Company and the Cedar Point Foundry Company, Plattsburg, N. Y., have consolidated under the name of the Plattsburg Foundry & Machine Company, which has increased its capital stock to \$25,000. John M. Weaver is president; John Ross, vice-president and treasurer; F. E. Tromblee, secretary, and Theodore Tromblee, general manager.

The Delphos Foundry Company's plant at Lima, Ohio, is to be sold at receiver's sale on October 1.

The United Iron Works, Iola, Kan., has let contract for a 60 x 120 ft. extension to its boiler room. The molding rooms have been recently enlarged.

Work has commenced on the new foundry at Hannibal, Mo., of the Anti-Friction Spiral Bearing Mfg. Company.

The Ireland Machine Company, Norwich, N. Y., has purchased a lot on State street, where it will erect a foundry, 58 x 180 ft., to be completed by November 1. The structure will be of concrete blocks and will be connected by a spur to the tracks of the Ontario & Western Railroad. The plant will be equipped with modern machinery and will contain an electric light plant. A. B. Ireland is president, H. A. Ireland vice-president, and J. S. Sturtevant secretary and treasurer.

The Terre Haute Malleable & Mfg. Company, Terre Haute, Ind., has let contract for the erection of a new plant, to consist of two main buildings of brick and steel construction, one a foundry 80 x 200 ft., the other annealing house and shipping room 80 x 150 ft. The foundry will be equipped with modern appliances, including a 12-ton hot air melting furnace. The annealing house will contain two large modern annealing ovens. The annual capacity will be about 2500 tons of malleable iron castings. The company, which has a capital stock of \$55,000, will also continue the business of the A. W. Wagner Mfg. Company, which has heretofore manufactured the Safety tackle block wire stretcher and the Ellwood and Dean wire stretchers. A sales office will be maintained at 40 Dearborn street, Chicago. A. W. Wagner is president and H. J. Waner secretary and treasurer.

#### Fires.

The fertilizer plant of the Wharton Fish Company, near Tuckerton, N. J., was destroyed by fire last week.

The power house of the Kansas City & Leavenworth Railway Company at Wolcott, Kan., was destroyed by fire a few days ago. The loss is placed at \$100,000.

The Argo Smelter, Denver, Colo., was damaged \$200,000 by fire September 8.

The Shaw crucible steel plant, near Aberdeen, Wash., was damaged by fire last week, the loss being placed at \$10,000.

The pattern shop of the Traylor Engineering Company, Allentown, Pa., was damaged by fire September 9.

#### Hardware.

Wm. A. Rogers, Limited, Niagara Falls, N. Y., and Northampton, Mass., manufacturer of silverware and cutlery, has moved the plating plant of the Northampton works to Niagara Falls, merging it with the company's plating plant in that place. Several years ago the company purchased the cutlery plant of the E. Wood Cutlery Company and the cutlery and plating plant of the Rogers & Wood Company, both of Northampton, and has since largely increased the capacity and output of both. The blanks for plating will continue to be manufactured at Northampton, as well as all other lines of cutlery which have hitherto been made there, and facilities for the manufacture of blanks and general table cutlery are being increased at the present time, so that there will be no decrease in the number of people employed at Northampton.

The Williams Company, formerly the Williams & Goldenblum Company, Wallingford, Conn., has sold its entire output of hack saws and band saws to the Smith & Hemenway Company, New York, and in consequence the corporation has been dissolved and the business will hereafter be operated as a firm.

The J. M. Carpenter Tap & Die Company, Pawtucket, R. I., is materially increasing its capacity by a rearrangement of machinery and by the utilization of space included by it in recent

building operations. The company is rushed with business, which necessitates additional manufacturing facilities, and new equipment of most modern type, following out the general scheme of the works, has been added for the purpose.

The business of F. L. Ellis & Son, Southington, Conn., manufacturers of builders' hardware and sheet metal specialties, has been incorporated in Connecticut as the Ellis Mfg. Company, with a capital stock of \$50,000. The incorporators are Frederick L. Ellis, Frederick M. Ellis, Edith R. Ellis and Julia A. Ellis. There will be no change in management and the same factory will be occupied as formerly.

Bostrom-Brady Mfg. Company, Atlanta, Ga., is now in full possession of its new plant at the corner of Madison avenue and Garnet street. The company manufactures the Bostrom improved farm and builders' levels.

#### Miscellaneous.

Ground has been broken for the new factory building of the Babcock Electric Carriage Company, Buffalo, N. Y., which will be 50 x 300 ft. and two stories in height, of fireproof brick construction. It is expected the new factory will be ready for the installation of machinery about November 1.

The four-story factory building, 60 x 260 ft., of reinforced concrete, which the E. R. Thomas Motor Company is adding to its plant at Buffalo, N. Y., will be completed during September, when machinery will be installed for the first of the 1907 Thomas product.

The Duplex Roller Bushing Company, Belfast, Maine, has recently added new machinery to its tackle block department, and is contemplating other additions to its works, though perhaps not until spring, when further equipment for the drop forging department will be purchased. The company does a large business for the United States Government in bushings for blocks used in the navy, and a large contract is on hand for blocks for use in the Panama canal work.

The Star Smelting & Refining Company, San Francisco, Cal., has recently incorporated for the manufacture of Babbitt metal, solder and other forms of metals, and is now erecting a building at 910 to 912 Folsom street for the purpose of conducting this class of business. O. H. Harrison is president, R. Moulds vice-president and S. Horowitz manager.

Shook & Fletcher, Birmingham, Ala., are engaged in opening brown ore mines near Ohatchie, Ala., on the Seaboard Air Line, about 50 miles east of Birmingham. Two four-log washers with capacity of 600 to 700 tons per day are now being erected, and the railroad is building four miles of road to reach the property. The track will be finished in about 60 days, when shipments will commence.

The American Spring & Mattress Company, Cedar Rapids, Iowa, has incorporated to manufacture bed springs and mattresses. A site has been secured for a factory, work on which will commence at once. Contracts have already been placed for some machinery and materials, but additional requirements, which are yet to be decided upon, will be placed later. Electric power is to be used. The officers of the company are H. E. Mortimer, president; A. M. Sorey, secretary, and I. M. Lobenstein, treasurer.

The Arthur C. Harvey Company, 374-394 Congress street, Boston, dealer in iron and steel, is to erect a new building, 73 x 120 feet and five stories, adjoining its present building on Congress street and bounded on one side by Stillings street and on the other by a spur track from the New York, New Haven & Hartford Railroad. This will give facilities for loading into or out of the warehouse eight cars at a time and will afford ample room for the conduct of the business for some years to come, as the cold cutting department, consisting of circular saws, plate shears and slitting machines, has been removed to another building, and the structural material is mainly carried in yards outside of the city. The new building will be an exact duplicate of that already occupied.

The Electric Cable Company, 17 Battery place, New York, has received further orders from the New York Central & Hudson River Railroad and from the New York & Queens County Railroad Company for Voltax, the high potential insulating compound with which these railroads have been experimenting for several years. The New York Central will use this material extensively in the electrical work at High Bridge in the installation of the new electric railroad work at that point. Among the other railroad companies which are using this material are the Illinois Central and the Norfolk Lighting & Railway Company, Norfolk, Va. The latter company will use Voltax compound for underground insulation work.

The Imperial Storage Battery Company, Quincy, Mass., has been incorporated in Massachusetts with capital stock of \$5000 and these officers: President, Edward E. Ekstrom, Boston, and treasurer and clerk, Edward H. Angier, Quincy, of the Translucent Fabric Company of that place. No details of the company's plans are yet available.

The American Car & Foundry Company has begun razing the old buildings on its newly acquired property at St. Charles, Mo., where a steel car plant will be erected.

The International Time Recording Company, Binghamton, N. Y., is building a new plant at Endicott, consisting of two buildings each 50 x 200 ft. No new machinery will be required.



## The Iron and Metal Trades

The statistics of the production of Pig Iron for the month collected by *The Iron Age* clearly show why such eagerness to secure Steel making Irons developed during August. The production of the Steel companies declined to 1,237,485 gross tons during that month, as compared with 1,323,391 tons in July and the record of 1,400,395 tons in March. The output of the stacks belonging to the Steel companies therefore showed a deficit in August of 85,906 tons. The production of the merchant furnaces was only 4779 tons less in August than it was in July, the figures being 690,011 tons for the latter month, as compared with 685,232 tons in August. It is quite evident, therefore, that the pressure is chiefly on the Steel making Irons, of which, too, there is absolutely no stock worth mentioning to act as a reserve.

The number of active furnaces is increasing and relief is promised, but it can hardly be expected that it can come this month.

Just how the situation lies with Foundry Irons cannot be clearly indicated, statistically, because of the refusal of many makers to report stocks on hand. The present time furnishes a good illustration of the fact that lack of data on this point tells against the makers, because it robs the trade of the opportunity to present accurate figures, which might allay the apprehension of buyers and prevent a runaway market.

There is comparatively little new capacity available in this branch of the industry.

The excitement in the Foundry Iron trade has subsided. There has been little additional buying for forward delivery, for which the market is a trifle easier in spots, and only a moderate volume of business for spot and early delivery, at full prices. There are rumors that purchases of Pig Iron Warrants in the Middlesboro District have been made on American account. While these lack confirmation, there is a chance of developments in that direction during the next few weeks.

It seems to be the policy of the large interests to keep the output of crude Steel and of rolled Steel products within the limits of the domestic supply of raw material and keep consumers as well satisfied as possible with prorated deliveries.

The Steel scarcity is acute. Chicago has bought 6000 tons of Axle Billets in eastern Pennsylvania, the fore-runner, it is believed, of further transactions of a like character. In Pittsburgh the supply of Steel is very short. There is a possibility that prices on Billets and Bars may be advanced, to take effect on October 1. In that case the products rolled from them, notably Sheets and Tin Plates, may be advanced.

The next heavy purchasing movement seems destined to develop in Steel cars. It is stated that there are now in the market inquiries for 40,000 cars, which would give the mills a very heavy additional tonnage.

The American Bridge Company has booked an order for about 20,000 tons of Bridge Material for the Harri-man lines, and other shops, East and West, have taken upward of 15,000 tons more from a number of sources.

There is a heavy movement in Wire and in Tubes. In Steel Bars some of the larger producers have advanced prices, but this action has not been general on the part of makers. Tin Plate buyers have again appeared in the market in numbers, and some large transactions have been closed.

The foreign markets are strong. The German syndicate advanced prices on Billets 5s. per ton on August 23. There are large inquiries in this market for Rails for South America, Mexico and Canada, but American mills are quite unable to consider the business.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Sept.12, 1906.	Sept.5, 1906.	Aug.15, 1906.	Sept.13, 1905.
<b>PIG IRON, Per Gross Ton:</b>				
Foundry No. 2, Standard, Philadelphia	\$20.50	\$20.25	\$18.75	\$16.25
Foundry No. 2, Southern, Cincinnati	18.75	18.50	17.50	14.25
Foundry No. 2, Local, Chicago	19.75	19.75	19.00	16.25
Bessemer, Pittsburgh	19.60	19.35	18.85	15.85
Gray Forge, Pittsburgh	18.35	18.35	17.85	14.60
Lake Superior Charcoal, Chicago	20.00	20.00	19.25	17.00
<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Bessemer Billets, Pittsburgh	28.00	28.00	28.00	25.00
Forging Billets, Pittsburgh	34.00	34.00	33.00	29.00
Open Hearth Billets, Phila.	30.50	30.00	29.00	27.00
Wire Rods, Pittsburgh	34.00	34.00	34.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
<b>OLD MATERIAL, Per Gross Ton:</b>				
O. Steel Rails, Chicago	16.50	16.50	14.50	14.50
O. Steel Rails, Philadelphia	18.00	18.00	16.75	16.25
O. Iron Rails, Chicago	23.50	23.50	22.00	20.50
O. Iron Rails, Philadelphia	24.00	24.00	21.00	22.00
O. Car Wheels, Chicago	20.00	20.00	18.50	15.50
O. Car Wheels, Philadelphia	17.50	17.50	16.75	15.50
Heavy Steel Scrap, Pittsburgh	16.75	16.75	16.00	16.00
Heavy Steel Scrap, Chicago	16.50	16.50	14.00	14.50
<b>FINISHED IRON AND STEEL, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia	1.73½	1.63½	1.63½	1.63½
Common Iron Bars, Chicago	1.71½	1.71½	1.66½	1.65
Common Iron Bars, Pittsburgh	1.60	1.50	1.50	1.70
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.89½
Beams, Pittsburgh	1.70	1.70	1.70	1.70
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.89½
Angles, Pittsburgh	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
<b>SHEETS, NAILS AND WIRE, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.80	1.75
Cut Nails, Pittsburgh	1.75	1.75	1.75	1.60
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.20
<b>METALS, Per Pound:</b>				
	Cents.	Cents.	Cents.	Cents.
Lake Copper, New York	19.12½	18.87½	18.62½	16.00
Spelter, St. Louis	5.95	5.90	5.90	5.85
Lead, New York	5.90	5.85	5.75	4.85
Lead, St. Louis	5.80	5.75	5.65	4.75
Tin, New York	40.30	40.60	41.50	32.05
Antimony, Hallett, New York	24.00	24.00	23.00	14.00
Nickel, New York	45.00	45.00	45.00	40.00
Tin Plate, Domestic, Bessemer, 100 lb., New York	\$3.94	\$3.94	\$3.94	\$3.74

### Chicago.

FISHER BUILDING, September 12, 1906.—(By Telegraph.)

The purchase of 6000 tons of Axle Billets by a local car interest from an eastern Pennsylvania mill marks the beginning of a heavy Steel movement from the East to relieve the shortage from which all large consumers are suffering, and which has been growing more acute daily owing to the withdrawal from the market not only of Western makers, but those located in the Youngstown and Pittsburgh districts as well. An increase in the metal output of the Illinois Steel Company owing to the blowing in of a new blast furnace has resulted in a proportionate increase in its Steel production, but this increased tonnage still falls short of finishing mill requirements. The reduction of \$3 a ton on Structural Shapes from stock made this week by all the large distributors is the result of improved mill deliveries rather than a falling off in demand, and prices have now simply declined from the abnormal basis on which they have been held during the last six months to their normal level. Independent of association action, the Republic Iron & Steel Company has made an advance on Steel Bars of \$2 a ton to 1.60c., Pittsburgh, but it is doubtful if other Bar makers, notably the Steel Corporation mills, will change from the 1.50c. basis. Notwithstanding the strength of the Sheet situation some of the independent manufacturers are reported as making concessions of \$1 a ton on the lighter gauges of Black and Galvanized for forward shipment. New tonnage in finished lines is generally light, but specifications show no decline in volume. A 4000-ton bridge for a Western railroad extension was awarded the Pennsylvania Steel Company, while contracts were also let for the new plant of Heath & Milligan and an addition to the power plant of the Commonwealth Electric Company, aggregating 3500 tons. Contracts for 2600 tons of Cast Iron Pipe for St.

Louis and 400 tons for Milwaukee were taken by the United States Cast Iron Pipe & Foundry Company. Contracts for two lake steamers were let to the Toledo Shipbuilding Company this week, and the Plates and Shapes required in their construction will be purchased shortly.

**Pig Iron.**—The insistent demand for spot Iron for prompt shipment, which has characterized the market the past three weeks, has subsided, as the wants of consumers have been temporarily satisfied. There has also been a marked improvement in shipments on contracts, not only from Northern furnaces but those in the South as well. Buying for future needs is limited almost entirely to 500 and 1000 ton lots, a local interest having disposed of 10,000 tons of Foundry Iron on miscellaneous orders in the past 10 days. The large buyers, are, however, still out of the market and are awaiting developments before buying into next year. For delivery through the first half Southern operators are uniformly quoting \$15.50 for No. 2, while for delivery through the last quarter \$16.50 to \$17 is asked. Virginia Basic and Foundry are held on the basis of \$17.50, furnace, and we note the sale of 2000 tons of Basic at this price for October, November and December shipments. Malleable Bessemer is unchanged at \$20.50 for forward delivery, and on Northern grades of No. 2 \$20, f.o.b. Chicago, is asked. We quote as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$20.00 to \$20.50
Northern Coke Foundry, No. 1.....	20.25 to 20.50
Northern Coke Foundry, No. 2.....	19.75 to 20.00
Northern Coke Foundry, No. 3.....	19.25 to 19.50
Northern Scotch, No. 1.....	20.00 to 20.50
Ohio Strong Softeners, No. 1.....	19.80 to 20.05
Ohio Strong Softeners, No. 2.....	19.30 to 19.55
Southern Coke, No. 1.....	19.90 to 20.40
Southern Coke, No. 2.....	19.40 to 19.90
Southern Coke, No. 3.....	18.90 to 19.40
Southern Coke, No. 4.....	18.40 to 18.90
Southern Coke, No. 1 Soft.....	19.90 to 20.40
Southern Coke, No. 2 Soft.....	19.40 to 19.90
Southern Gray Forge.....	16.90 to 17.40
Southern Mottled.....	16.65 to 17.15
Malleable Bessemer.....	20.00 to 20.50
Standard Bessemer.....	20.55 to 20.80
Jackson Co. and Kentucky Silvery, 6 %.....	22.30 to 22.80
Jackson Co. and Kentucky Silvery, 8 %.....	23.30 to 23.80
Jackson Co. and Kentucky Silvery, 10 %.....	24.30 to 24.80

**Rails and Track Supplies.**—An additional order for 18,000 tons of Standard Section Rails for the Missouri, Kansas & Texas Railroad is under negotiation, and it is probable that it will be placed in a few days. There is no abatement in the demand for track material, Western roads continuing to buy freely for 1907 requirements. Quotations are as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.27½c. to 2.50c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$29 to \$30; 25-lb., \$31; 20-lb., \$32; 16-lb., \$33; 12-lb., \$34, f.o.b. mill. Standard Sections, \$28, f.o.b. mill, full freight to destination.

**Old Material.**—The upward movement of the market has been temporarily checked, and dealers are endeavoring to unload their large stocks at the prices now prevailing, but as consumers are not buying a slight decline in values is anticipated. The Rock Island this week disposed of 1500 tons of desirable material, on which the prices quoted below were obtained. The Inland Steel Company has temporarily satisfied its requirements of Heavy Melting Steel, having purchased a total of 5000 tons in the past two weeks. Quotations on gross tons, car lots, f.o.b. Chicago, are as follows:

Old Iron Rails.....	\$23.50 to \$24.00
Old Steel Rails, 4 ft. and over.....	17.50 to 18.00
Old Steel Rails, less than 4 ft.....	16.50 to 17.00
Heavy Relaying Rails, subject to inspection, 50 lb. and under.....	28.50 to 29.00
Old Car Wheels.....	20.00 to 20.50
Heavy Melting Steel Scrap.....	16.50 to 17.00
Frogs, Switches and Guards.....	16.50 to 17.00
Mixed Steel.....	14.00 to 14.50

The following quotations are per net ton:

Iron Fish Plates.....	\$19.00 to \$19.50
Iron Car Axles.....	24.50 to 25.00
Steel Car Axles.....	20.50 to 21.00
No. 1 Railroad Wrought.....	16.00 to 16.50
No. 2 Railroad Wrought.....	15.50 to 16.00
Railway Springs.....	15.00 to 16.00
Locomotive Tires, smooth.....	15.50 to 16.00
No. 1 Dealers' Forge.....	13.50 to 14.00
Mixed Busheling.....	11.50 to 12.00
Iron Axle Turnings.....	10.50 to 11.00
Soft Steel Axle Turnings.....	10.50 to 11.00
Machine Shop Turnings.....	10.00 to 10.50
Cast Borings.....	9.00 to 9.50
Mixed Borings, &c.....	9.00 to 9.50
No. 1 Mill.....	10.00 to 10.50
No. 2 Mill.....	9.00 to 9.50
No. 1 Rollers, cut to Sheets and Rings.....	10.50 to 11.00
No. 1 Cast Scrap.....	15.50 to 16.00
Stove Plate and Light Cast Scrap.....	13.00 to 13.50
Railroad Malleable.....	15.00 to 15.50
Agricultural Malleable.....	14.50 to 15.00

**Metals.**—Another advance of ¼c. has been made on Copper. There is practically no spot Copper to be had, and the sales made are for November and December shipment. Consumers are well covered for present needs, but are booking heavily for forward delivery. Pig Tin has fluctuated considerably during the week, but at the close is on the same

basis as last week. Lead has advanced another 10c. per 100 lb., as has also Spelter. We quote: Casting Copper, 19c. to 19¼c.; Lake, 19½c. to 19¾c., in car lots; small lots, ¼c. to ½c. higher; Spelter, prompt delivery, 6.30c. to 6.40c., for car lots; Lead, desilverized, 6c. to 6.10c., for 50-ton lots; Corroding, 6.67½c. to 6.77½c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Cookson's Antimony, 28c., and other grades, 26c. to 27c.; Sheet Zinc is \$7.75 list, f.o.b. Lassel, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16½c.; Heavy Copper, 16¼c.; Copper Bottoms, 15¼c.; Copper Clips, 16c.; Red Brass, 15¼c.; Red Brass Borings, 13¼c.; Yellow Brass, 12¼c.; Yellow Brass Borings, 10½c.; Light Brass, 8¼c.; Lead Pipe, 5.40c.; Tea Lead, 5c.; Zinc, 5c.; Pewter, No. 1, 26c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

(By Mail.)

**Billets and Rods.**—The purchase of 6000 tons of Axle Billets from an eastern Pennsylvania manufacturer by a local consumer marks the first heavy movement of Steel from the East to meet the shortage which exists on account of the withdrawal of practically all of the Western mills from the market through the remainder of the year. Other purchases are under negotiation, and include both Forging and Rolling Billets. We quote: Axle Billets, \$34; Forging Billets, \$37 to \$38, and Bessemer and Open Hearth Rods, \$37 to \$38, f.o.b. Chicago.

**Structural Material.**—Local distributors have reduced quotations on material from stock \$3 to \$4 a ton, this move no doubt having been prompted by the improved deliveries that can be secured from the Structural mills. The operation of the new mill of the Illinois Steel Company at its South Works has relieved the local situation, and consumers are willing to wait for direct shipments, now that they can be made in two to four weeks. The demand for semi-fabricated material is, however, unabated, and warehouses report the continued movement of a large tonnage. Material from stock is now quoted on the basis of 2.05c. to 2.10c., f.o.b. Chicago. The contract for a 4000-ton bridge for Western railroad extensions was awarded the Pennsylvania Steel Company. Quotations are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.96½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending and other shop work.

**Plates.**—Mill deliveries of both Universal and Sheared Plates continue to be further deferred, and nothing better than 30 days can be done by Western mills. New tonnage is comparatively light, although specifications on existing contracts are growing larger from day to day. Quotations are as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76½c. 3-16 in., 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 in., 1.86½c., base, for ¼ in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No. 8, up to 60 in. wide, 2.15c. to 2.25c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—While some of the independent manufacturers have been asking premiums on certain gauges of Black and Galvanized Sheets, concessions of \$1 a ton can still be secured on the lighter sizes. The purchase of a large tonnage of Black Sheets from an independent mill by a producer that is short of certain sizes is also reported on a basis of \$2 a ton below prevailing quotations. Current demand is heavy and the pressure on the mills for deliveries is insistent. Quotations are as follows: Blue Annealed, No. 10, 1.91½c.; No. 12, 1.96½c.; No. 14, 2.01½c.; No. 16, 2.11½c.; Box Annealed, Nos. 17 to 21, 2.41½c.; Nos. 22 to 24, 2.46½c.; Nos. 25 and 26, 2.51½c.; No. 27, 2.56½c.; No. 28, 2.66½c.; No. 29, 2.81½c.; No. 30, 2.91½c. Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 15 and 16, 2.81½c.; Nos. 17 to 21, 2.96½c.; Nos. 22 to 24, 3.11½c.; Nos. 25 and 26, 3.31½c.; No. 27, 3.51½c.; No. 28, 3.71½c.; No. 30, 4.21½c. Sheets from store: Blue Annealed, No. 12, 2.15c. to 2.25c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.60c. to 2.70c.; Nos. 22 to 24, 2.65c. to 2.75c.; No. 26, 2.70c. to 2.80c.; No. 28, 2.85c. to 2.95c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3.10c. to 3.20c.; Nos. 22 to 24, 3.35c. to 3.45c.; No. 26, 3.45c. to 3.55c.; No. 27, 3.55c. to 3.75c.; No. 28, 3.85c. to 3.95c.; No. 30, 4.45c. to 4.55c.

**Bars.**—Western Iron mills are now uniformly quoting on the basis of 1.55c., Pittsburgh, while the Republic Iron & Steel Company is maintaining an advance of \$1 a ton above that price. New business is fairly heavy and is proportionately greater than that for Steel. Western Steel Bar mills are literally swamped with specifications and shipments cannot be made in less than two or three months. We quote as follows: Iron Bars, 1.71½c. to 1.76½c.; Steel Bars, 1.66½c.,



both half extras: Hoops, 2.06½¢, extras as per Hoop card; Bands, 1.66½¢, as per Steel card; Soft Steel Angles and Shapes, 1.66½¢, half extras. Store prices are as follows: Bar Iron, 2.10¢; Steel Bars, 1.85¢, and as high as 2¢, is asked on certain scarce sizes; Steel Bands, 1.85¢, to 1.90¢, half extras; Soft Steel Hoops, 2.30¢, to 2.40¢, full extras.

**Merchant Pipe.**—Jobbers throughout this section are buying freely for current needs and are also covering future requirements more generally than has been the case up to the present time. Quotations, however, continue on an exceedingly low basis and owing to the high cost of raw material concessions are practically unheard of. Sales are made on the basis of 81 and 5 off the list, Pittsburgh, and discounts in car lots, Chicago, are as follows: Black Steel Pipe, 79.35 per cent. on the base sizes, ¾ to 6 in., and Galvanized, 69.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 in.

**Boiler Tubes.**—Local distributors report a heavier movement of material from stock. The mills, however, are closing little new business and are working on specifications that are being received on contracts placed several months ago. Mill quotations are well maintained, as follows, on base sizes, 2¾ to 5 in., in car lots; Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½ in. and smaller and lengths over 18 ft., and 2½ in. and lengths over 22 ft., 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ in. ....	40	35	42½
1½ to 2¼ in. ....	50	35	35
2½ in. ....	52½	35	30
2½ to 5 in. ....	60	47½	42½
6 in. and larger. ....	50	35	..

**Cast Iron Pipe.**—The city of Milwaukee will this week close for 1100 tons of Cast Iron Pipe for shipment within the next two or three months. Current demand from municipalities and Western roads continues heavy, notwithstanding the season and deliveries on orders that are now being placed cannot be promised before December. Quotations are as follows: Water Pipe, 4 in., \$33; 6, 8, 10 and 12 in., \$32; over 12 in., \$31, with \$1 extra for Gas Pipe.

**Merchant Steel.**—So far as new tonnage it concerned, the market remains exceedingly quiet and prices are being well maintained on the basis that has been prevailing for several months. Specifications, however, are unusually heavy, and are in excess of mill capacity, and shipments are constantly being further deferred. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.86½¢; Iron Finish, up to 1½ x ½ in., 1.81½¢; Iron Finish, 1½ x ½ in. and larger, 1.66½¢, base; Channels for solid rubber Tires, ¾ to 1 in., 2.16½¢, and 1½ in. and larger, 2.06½¢; Smooth Finished Machinery Steel, 1.91½¢; Flat Sleigh Shoe, 1.71½¢; Concave and Convex Sleigh Shoe, 1.96½¢; Cutter Shoe, 2.35¢; Toe Calk Steel, 2.21½¢; Railway Spring, 1.86½¢; Crucible Tool Steel, 6½¢, to 8¢, and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

**Coke.**—Practically all of the Western foundries have now covered their requirements through the remainder of the year, and many of them have contracted at current prices through the first half of 1907. The demand for spot shipment, owing to the car shortage which prevails in the Connellsville region and which to some extent is delaying shipments from local byproduct ovens, is large, and slight premiums are being exacted for material on track. We quote: Byproduct Foundry Coke at \$5.75 to \$5.90; 72-hr. Connellsville, \$5.65 to \$5.90, and Virginia, \$5.25, f.o.b. cars Chicago.

## Philadelphia.

REAL ESTATE TRUST BUILDING, September 11, 1906.

The Pig Iron situation is much the same as it was a week ago. Prices may average a trifle higher, but they are liable to be influenced by the monthly statement of furnace conditions. It is felt that we are on the edge of an increased supply of Pig Iron, and if August shows that the turn has been made the advancing tendency in prices will probably be checked at once. There is unquestionably a distinct shortage of Foundry Irons, otherwise buyers would not be paying \$1 to \$1.50 per ton premium for September shipments. It is claimed that consumers bought heavier tonnages than they expected to use, but their requirements are so much greater than their expectations that they are compelled to meet their wants by additional purchases. It is further claimed that furnaces are as a rule making full deliveries, but they are not in a position to anticipate forward deliveries which the majority appear to want, and to make up this shortage, there is no alternative but to pick up odd lots at such prices as may induce the holders to let it go. This, however, is believed to be a temporary condition, as there is plenty of Iron at \$20.50 to \$21 for delivery during the period from October to April, and with more liberal supplies, even these figures would easily shade off 30¢ to \$1 per ton, besides obliterat-

ing everything in the way of a premium. Sentiment has no doubt affected prices more or less during the past few weeks, and while \$20 will probably be a minimum figure during the fall and winter months, it is hardly likely that they will go much beyond that, although of course there is a possibility of interruptions due to freight congestion, scarcity of labor and other influences which would be inimical to good working conditions. For the present, therefore, the certainties appear to be that the volume of business during the remainder of the year will be the largest on record, while the uncertain features will be how much Pig Iron can be made and the proportion it will bear to consumption. If these can be correctly estimated it will not be difficult to determine the question of prices.

**Pig Iron.**—The actual tonnage which is changing hands is much less than might be inferred from the excitement as regards prices. A few lots of 50 to 300 or 400 tons each at fancy prices are not impressive, when it is considered that millions of tons have to be delivered at \$2 to \$3 per ton below the going prices for spot lots. There is an undoubted scarcity of Foundry grades, and those who need more than they engaged for this and next month's delivery have to pay all sorts of prices, from \$21.50 to \$22 and upward. It is true that most of the sales are of this character and at these and even better prices, but the tonnage is so small compared with the big sales during July and August that it is of much less importance than appears on the surface. The entire situation hinges on whether the furnaces will be able to meet the increased requirements. Early in the year it was figured out that production would be much larger than it has proved to be, but there is no reason why the increase during the next six months should not measure up to the earlier as well as the more recent estimates. As a matter of fact the more favorable outlook and the advance in prices should stimulate production, and no satisfactory reasons can be given to the contrary. The semipanicky feeling, however, is so general that palpable evidences of increased production will be necessary before the market settles down to normal conditions. These may be foreshadowed in the furnace report, which at this time will be specially important, indicating, as it probably will, how near and to what extent increases may be expected as the season advances. There is no serious scarcity apart from the Foundry grades, and, as we said before, greater ease in this direction is looked for in the near future. Basic Iron is by no means plentiful, yet there is enough to go around, and if a buyer wanted a few thousand tons for the last quarter it could doubtless be had at \$18.50 to \$18.75, delivered. Eliminating all the speculative features, the market is in a most excellent condition. All the Iron that can be made can be readily sold at satisfactory prices, but if buyers will possess their souls in patience they need have no fears of not getting sufficient material to carry them through at around to-day's prices. The quotations given below are for deliveries during the last quarter of 1906 and the first quarter of 1907, at points in eastern Pennsylvania. Spot lots or early October command premiums of \$1 to \$2 more, but the market is fairly represented by the following quotations:

No. 1 X Foundry. ....	\$21.50 to \$22.50
No. 2 X Foundry. ....	20.50 to 21.00
No. 2 Plain. ....	19.50 to 20.00
Standard Gray Forge. ....	17.75 to 18.25
Ordinary Gray Forge. ....	17.00 to 17.50
Basic. ....	18.50 to 18.75
Low Phosphorus. ....	24.50 to 25.00
Malleable. ....	21.00 to 21.50

**Steel.**—The demand exceeds the supply, and business for ordinary Rolling Billets, any delivery during 1906, could not be done at less than \$30.50 and from that up, according to circumstances; Forging Billets, \$36 up to \$40.

**Steel Alloys.**—The market is strong, although there is not much business doing. Prices are hard to quote, but would probably be about the same as last week, viz.: Ferromanganese, \$90 to \$92, for September shipments; \$87 to \$89 for last quarter, and \$82 to \$85 for 1907; Ferrosilicon, spot or September, \$95 to \$97 and 20 per cent. Spiegel, \$35.50 to \$36.50.

**Plates.**—There is a good supply of new business and a great many orders have been placed during the past week. There is a disposition to cover for all probable requirements during the next six months, so that the tonnages entered are of considerable importance. Specifications are a little out of proportion with the new business, but the capacity is so large that the mills soon feel any delay in specifying. Prices are firm, but unchanged, as follows:

	Carlond. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel. ....	1.73½	1.78½
Flange or Boiler Steel. ....	1.83½	1.88½
Marine. ....	2.13½	2.18½
Locomotive Firebox Steel. ....	2.23½	2.28½
The above are base prices for ¼-in. and heavier. The following extras apply:		
3-16-in. thick. ....		\$0.10
Nos. 7 and 8, B. W. G. ....		.15
No. 9, B. W. G. ....		.25
Plates over 100 to 110 in. ....		.05
Plates over 110 to 115 in. ....		.10
Plates over 115 to 120 in. ....		.15

Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00

**Structural Material.**—The demand is very good, but not urgent enough to prevent fairly prompt shipments. Most of the mills have a good deal of business on their books and prospects are good, but the increased output, present and prospective, has a sedative influence, and keeps the market in a very safe condition, prices being unchanged, as follows: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

**Bars.**—There is a good demand, and the feeling in regard to business during the remainder of the year is very hopeful. The unsettled condition of labor at some of the mills is a disturbing influence, but apart from that the situation is healthy and likely to develop increased activity as the season advances. Steel Bars are specially active and deliveries at the official figures cannot be promised in less than 60 to 90 days, but at a slight premium they can usually be had from one or another within 30 days. Refined Bar Iron can be had inside 60 days, in some cases in half that time. Prices are 1.73½c. to 1.78½c. for either Iron or Steel.

**Sheets.**—The demand is strong, but business is still taken at prices recently quoted, which for ordinary lots are as follows, or a tenth less for mill shipments: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

**Old Material.**—There is but little change to report, although there is more demand for Rolling Mill Scrap. Steel is inactive, as consumers refuse to meet the prices quoted by dealers. Bids and offers for deliveries in buyers' yards are about as follows:

Steel Crops.....	\$18.00 to \$18.50
No. 1 Steel Scrap.....	17.75 to 18.25
Low Phosphorus Scrap.....	22.50 to 23.00
Old Steel Axles.....	21.00 to 22.00
Old Iron Axles.....	29.50 to 30.50
Old Iron Rails.....	24.00 to 25.00
Old Car Wheels.....	17.50 to 18.00
Choice Scrap, R. R. No. 1 Wrought.....	21.00 to 22.00
Choice No. 1 Yard Scrap.....	19.00 to 19.50
Long and Short.....	17.00 to 17.50
Machinery Scrap.....	17.00 to 17.50
Wrought Iron Pipe.....	15.50 to 16.00
No. 1 Forge Fire Scrap.....	13.50 to 14.00
No. 2 Light Ordinary.....	10.50 to 11.00
Wrought Turnings.....	13.50 to 14.00
Axle Turnings, Choice Heavy.....	14.00 to 14.50
Stove Plate.....	13.25 to 13.75
Cast Borings.....	11.00 to 11.50

## Birmingham.

BIRMINGHAM, ALA., September 9, 1906.

**Pig Iron.**—The excitement prevailing for several weeks has subsided to a considerable extent, though prices continue firm at \$16 for last quarter delivery and \$15 to \$16 for shipment during first half of 1907. The business now being placed is almost exclusively for delivery next year, although there are still urgent inquiries for car lots of Soft Iron to be used as "medicine," and for this accommodation melters are willing to pay fancy prices. Every effort is being made to increase production. The Tennessee Coal, Iron & Railroad Company expects to blow in its No. 3 furnace at Bessemer the last of the week. This stack has been out since last December, and has been practically rebuilt and modernized. With the blowing in of this furnace the Tennessee-Republic companies will have every stack in the district in blast, with one exception, a condition which has not prevailed in years. The labor situation since the miners' strike was called off has been very satisfactory so far as the production of Iron is concerned, but a scarcity of cars for moving Iron has developed among some of the Southern roads within the past few days, while others have all the transportation facilities needed. Cotton, however, has not yet begun to move in any volume, but will within the next 30 days, after which time producers are always considerably hampered by an insufficient supply of cars.

**Cast Iron Pipe.**—The general condition of the market is unchanged. New business in small lots continues, but no large contracts are being figured on. Manufacturers are comfortably filled ahead, and are now giving their attention to producing the largest possible tonnage, but are making little progress in gaining on their orders. On smaller sizes it is impossible to secure promise of delivery under several months. Quotations on Water Pipe are approximately as follows: 4 to 6 in., \$30; 8 to 12 in., \$29; over 12-in., \$27.50, with \$1 per ton extra for Gas Pipe. On large contracts these prices might be slightly shaded, but on small quantities a slight premium would probably be asked.

**Old Material.**—Activity is increasing, and dealers report best conditions for many months. Mills are buying more freely, and it is now impossible to supply the demand for Cast Scrap. Stocks are growing smaller on dealers' yards, though there is quite an accumulation of Wrought yet to be disposed of. Prices prevailing last week are still

ruling, and quotations are about as follows per gross ton f.o.b. cars here:

Old Iron Rails.....	\$19.50 to \$20.00
Old Iron Axles.....	18.50 to 19.00
Old Steel Axles.....	16.00 to 17.00
Old Car Wheels.....	16.50 to 17.50
No. 1 Railroad Wrought.....	16.50 to 17.00
No. 2 Railroad Wrought.....	14.50 to 15.00
No. 1 Country Wrought.....	14.50 to 15.00
No. 2 Country Wrought.....	11.50 to 12.00
Wrought Pipe and Flues.....	11.50 to 12.00
Railroad Malleable.....	13.00 to 13.50
No. 1 Steel.....	13.50 to 14.00
No. 1 Machinery Cast.....	13.50 to 14.00
Stove Plate and Light Cast.....	10.00 to 10.25
Cast Borings.....	7.00 to 7.50

## Pittsburgh.

PARK BUILDING, September 12, 1906.—(By Telegraph.)

**Pig Iron.**—The Pig Iron market has been very quiet the past week, as far as sales are concerned, but consumers are urging the furnaces for deliveries and are taking Iron in as fast as the furnaces can ship it. The large consumers are pretty well covered and the furnaces are well sold up, so that there is not likely to be a heavy buying movement in Pig Iron for some time to come. Sales are reported the past week of 8000 to 10,000 tons of Bessemer, for delivery over the balance of this year, at \$18.75, Valley furnace, and 4000 to 5000 tons of Basic at \$18.50, Valley furnace. There is not much inquiry for Foundry Iron, but for delivery over the balance of this year some small sales are reported at \$19.50 to \$20, Valley furnace. For delivery in first quarter of next year most sellers are quoting \$18.50 at furnace for Northern No. 2, and we note a sale of 600 tons at this price. Forge Iron is very quiet, with Northern makes held at about \$17.50 at furnace.

**Steel.**—Bessemer and Open Hearth Billets continue scarce and bring high prices. We quote Bessemer Billets at \$28 to \$28.50, and Open Hearth, \$29 to \$30 at maker's mill. We note a sale of 2000 tons of Bessemer Billets at \$28, Pittsburgh. Sheet and Tin Bars in long lengths for September delivery are held at \$30, Pittsburgh. About September 20 the Carnegie Steel Company will announce its price on Sheet and Tin Bars for last quarter delivery, and it is expected the price will be \$30 or possibly higher.

(By Mail.)

While the situation in the Pig Iron trade is very tight and there is little metal for sale for delivery through the first quarter of next year, yet the impression strongly prevails that prices are probably as high as they will go and that the supply of Pig Iron, especially Bessemer, will be increased within the next month or so. At the present time there are four stacks in the two valleys that are out of blast, these being Mattie at Girard, Claire at Sharpsville, No. 4 stack of the Shenango Furnace Company at Sharpsville and Atlantic at New Castle. All are being repaired and are expected to be in blast not later than October 15. The Tod furnace blew in August 30, and in a month the two valleys will be making 1200 tons a day more of Bessemer Iron than is now being turned out. In addition, the Republic Iron & Steel Company has two new blast furnaces coming on, one of which will be ready within a short time, and will be able to turn out about 400 tons per day. Reports of a considerable shortage in the supply of Bessemer and Basic Iron, while true to some extent, have possibly been exaggerated. The Steel Corporation, which by its heavy purchases of Pig Iron earlier in the year had much to do with advancing prices, is not in the market as a buyer of Bessemer or Basic, and probably will not be at present prices. Some of the Steel Corporation officials believe that the market has gone too high and that current prices cannot be sustained through the winter months. Bessemer Iron is firm at \$18.50 to \$18.75, Valley furnace, and Basic at \$18.25 to \$18.50. There is some inquiry for Foundry Iron and Northern No. 2 for delivery through first quarter has sold at \$18.50, Valley furnace. For delivery over the balance of this year Foundry Iron is scarce, and has brought as high as \$19.50 to \$20, Valley furnace. The Steel market does not show any improvement in supply and prices continue strong. Bessemer Billets bring from \$28 to \$28.50 and Open Hearth can hardly be had at any price. New business and specifications in Finished Iron and Steel so far this month show a falling off as compared with August, but this is natural in view of the wonderful activity of last month, when more tonnage was placed in Finished Material than in any month for a long time. Prices all along the line are firm, and while some effort is being made to advance Steel Bars and one or two other lines it is known positively that the large interests are opposed to



such action and will likely prevent it. Furnace and Foundry Coke continue scarce and are bringing high prices. The market on Old Material is firm, but not a great deal is changing hands, consumers refusing to pay the high prices asked by dealers.

**Ferromanganese.**—We note a continued active demand for Ferro, which for spot delivery brings \$90 to \$95, while for the balance of the year \$85 is quoted. A sale of 25 tons of foreign 80 per cent. Ferro for September delivery is reported at about \$90, Pittsburgh.

**Wire Rods.**—The demand for Wire Rods is more active than for several months and the supply is limited. Bessemer Rods are held at \$34 to \$35, Pittsburgh, and Chain Rods at about the same price.

**Muck Bar.**—The higher prices and scarcity of Forge Pig Iron have brought about a sharp advance in prices of Muck Bar. We quote best grades of Muck Bar, made from all Pig Iron, at \$30.50 to \$31, while Muck Bar made from part Scrap is held at \$27.50 to \$28, Pittsburgh.

**Skelp.**—We note a fairly active demand for Skelp, and can report a sale of a round tonnage of Sheared Iron, for delivery over the balance of this year. Prices are firm and we quote: Grooved Steel Skelp, 1.57 $\frac{1}{2}$  c. to 1.60 c.; Sheared Steel Skelp, 1.60 c. to 1.65 c.; Grooved Iron Skelp, 1.65 c. to 1.70 c.; Sheared Iron Skelp, 1.75 c. to 1.80 c., Pittsburgh, these prices being for ordinary widths and gauges.

**Steel Rails.**—The inquiry for Steel Rails for next year's delivery have quieted down considerably, and the Carnegie Steel Company has taken no large contracts since our last report. The demand for Light Rails continues active, 16 to 20 lb. Sections being held at \$31, and 25 to 45 lb. Sections at \$30, Standard Sections remaining at \$28, at mill.

**Structural Material.**—Contracts placed during the week include 1500 tons of bridge work for the Pennsylvania lines at Chicago, taken by the American Bridge Company, and 1800 tons of viaduct work for the Pittsburgh, New Castle & Butler trolley line, taken by the McClintic-Marshall Construction Company. The American Bridge Company turned out in August 52,000 tons, which is a record breaker for a summer month. There is a steady tonnage being placed in small orders, and all the leading Structural concerns are filled up for months. Deliveries by the mills are quite satisfactory, when the amount of tonnage on their books is considered. Premiums continued to be paid for spot shipment of small lots and certain sizes. Prices are very firm, and we quote: Beams and Channels, up to 15-in., 1.70 c.; over 15-in., 1.80 c.; Angles, 3 x 2 x  $\frac{1}{4}$  in. thick up to 6 x 6 in., 1.70 c.; 8 x 8 and 7 x 3 $\frac{1}{2}$  in., 1.80 c.; Zees, 3-in. and larger, 1.70 c.; Tees, 3-in. and larger, 1.75 c. Under the Steel Bar card Angles, Channels and Tees under 3-in. are 1.60 c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Plates.**—Reports are that the Pennsylvania Railroad will soon be in the market for about 14,000 more cars, which will require upward of 150,000 tons of Plates and Small Shapes. Bids for these cars are expected to be asked for very soon. New tonnage coming to the mills has been only fair for some time, but specifications on contracts are very heavy, and shipments by the mills are large. Most of the leading Plate mills cannot make deliveries on Universal or Sheared Plates inside of six weeks or two months. Prices are very firm, concessions having almost entirely disappeared. We quote: Tank Plates,  $\frac{1}{4}$  in. thick, 6 $\frac{1}{2}$  in. up to 100 in. in width, 1.60 c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 lb.
Gauges lighter than $\frac{1}{4}$ -in. to and including 3-16-in. Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

**Trans.**—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of  $\frac{1}{2}$  of 1 per cent. is allowable. Pacific Coast base, 1.60 c., f.o.b. Pittsburgh, with all rail tariff rates of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

**Sheets.**—The expected advance in prices of Black and Galvanized Sheets has not yet been announced, and whether it will be made depends largely on whether the Carnegie Steel Company will announce an advance in prices of Sheet Bars on October 1, this being generally expected. New demand and specifications for Sheets have not been quite as heavy so far this month as in August, but most of the mills

are sold up for the balance of this year and have a good deal of tonnage on their books for first quarter. Some of the independent mills that can make reasonable prompt shipments are asking premiums in prices, and in some cases are getting them. We quote: Nos. 17 to 21, 2.25 c.; Nos. 22 to 24, 2.30 c.; Nos. 25 and 26, 2.35 c.; No. 27, 2.40 c.; No. 28, 2.50 c.; No. 29, 2.65 c., and No. 30, 2.75 c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45 c.; Nos. 12 and 14, 2.55 c.; Nos. 15 and 16, 2.55 c.; Nos. 17 to 21, 2.80 c.; Nos. 22 and 24, 2.95 c.; Nos. 25 and 26, 3.15 c.; No. 27, 3.35 c.; No. 28, 3.55 c.; No. 29, 3.80 c., and No. 30, 4.05 c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, at \$3.10 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

**Bars.**—Efforts of two mills rolling Steel Bars to advance prices, one of which buys its Billets in the open market, will likely fail, as the larger Steel Bar interests are very strongly opposed to any advance at this time. New tonnage in both Iron and Steel Bars is heavy and the mills are all behind in deliveries, especially on Steel Bars. We understand that the Crucible Steel Company is holding Steel Bars at 1.60 c., but the other mills continue to quote the official price of 1.50 c., base, half extras. Steel Bars for prompt delivery are bringing 1.65 c. to 1.70 c. We quote Iron Bars at 1.60 c. minimum, but note that as high as 1.70 c. to 1.75 c. is being paid for prompt delivery.

**Hoops and Bands.**—Little new tonnage is being placed, the mills running mostly on specifications on old contracts. We quote Steel Hoops at 1.90 c. and Bands for all purposes at 1.50 c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

**Tin Plate.**—The amount of tonnage in Tin Plate entered by the mills in August was abnormally heavy, and promises to be fully as large in September. Many leading consumers are placing heavy contracts for delivery in first quarter of next year, but beyond that period the mills refuse to enter business at present prices, believing that the market will be higher. Whether prices of Tin Plate will be advanced depends largely on what is done with Tin Bars for the quarter commencing October 1. If these are advanced, and it is generally expected that they will be put to \$30 or higher, then it is practically certain that an advance in Tin Plate will follow. All the Tin Plate mills are crowded with orders, and we are advised that the heavy tonnage taken by the mills last month and this month is at the full official price of \$3.70 per box. On the course of the Pig Tin market will also largely depend the future prices of Tin Plate. We quote Tin Plate at \$3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5 c. a box is allowed for carload and larger lots.

**Railroad Spikes.**—The fact that many leading railroads have commenced to double spike their Rails, while others are preparing to do so, on account of the heavy sections they are laying, largely explains the heavy demand for Spikes, which is beyond the capacity of the mills to fill promptly, and which promises to continue for some time. Several of the local concerns that make Railroad Spikes report that they are out of the market as sellers for balance of this year delivery, and that they have also entered a good deal of tonnage for next year. We quote Bessemer Spikes at \$2.35 to \$2.40 per 100 lb. for forward delivery. As high as \$2.50 is being paid for Spikes for reasonably prompt shipment.

**Spelter.**—A slightly better demand is reported, and prices are also a little firmer. We quote best grades of Western Spelter at 5.85 $\frac{1}{2}$  c., St. Louis, equal to 6 c., Pittsburgh.

**Merchant Pipe.**—The market for Pipe continues to be characterized by heavy buying, and all the leading mills are sold up for two or three months ahead. On Line Pipe the mills are practically out of it, having all the tonnage on their books they can take care of this year. Prices are firm but unchanged and there are no indications at this time of an advance. The extreme discount on Merchant sizes of Steel Pipe remains at 81 and 5 per cent. off, to the large trade. Official discounts for carloads, which continue to be shaded one point or more, are as follows:

Merchant Pipe.

	Jobbers, carloads.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
$\frac{1}{2}$ and $\frac{1}{4}$ in.....	72	56	60	53
$\frac{3}{8}$ in.....	74	60	71	57
$\frac{1}{2}$ in.....	76	64	73	61
$\frac{3}{4}$ to 6 in.....	80	70	77 $\frac{1}{2}$	67 $\frac{1}{2}$
7 to 12 in.....	75	60	72 $\frac{1}{2}$	57
Extra strong, plain ends:				
$\frac{1}{4}$ to $\frac{3}{8}$ in.....	65	53	62	50
$\frac{1}{2}$ to 4 in.....	72	60	69	57
$\frac{3}{4}$ to 8 in.....	68	56	65	53
Double extra strong, plain ends:				
$\frac{1}{2}$ to 8 in.....	61	50	58	47

**Boiler Tubes.**—There is nothing of special interest to report. A fair amount of new tonnage is being placed, and

buyers are specifying freely on contracts. There is still some unevenness in prices, which are more or less shaded. Discounts on carload lots, which are still being shaded to some extent, are as follows:

Boiler Tubes.		Iron.	Steel.
1 to 1 1/4 in.	.....	45	50
1 1/4 to 2 1/4 in.	.....	45	52
2 1/4 in.	.....	50	64
2 1/4 to 5 in.	.....	57	70
6 to 13 in.	.....	45	62

**Iron and Steel Scrap.**—The Scrap market is in the same condition as reported a week ago. Dealers who have Scrap in stock believe that prices will be better, and are inclined to hold it, while consumers are not willing to meet the ideas of sellers, and are holding off from buying. The market is in the shape of a deadlock, and comparatively little material is changing hands. Heavy Steel Scrap continues to be held at \$16.75 to \$17 per gross ton, and reports are that offers of \$16.50 by consumers have been turned down. Dealers quote other grades as follows, per gross ton: No. 1 Wrought Scrap, \$18.25 to \$18.50; Bundled Sheet Scrap, \$14.50 to \$14.75; Cast Iron Borings, \$9.75 to \$10; Wrought Turnings, \$12.25 to \$12.50; Machinery Cast Scrap, \$16; Iron Axles, \$28 to \$28.50; Steel Axles, \$23.50 to \$24.

**Connellsville Coke.**—The estimated production of Coke in the Upper and Lower Connellsville regions during the first 30 weeks of this year is given as 8,275,577 tons, a much larger output than ever before in a similar period. The corresponding output in 1905 was 7,426,406 tons, and in 1904 5,525,866 tons. It is estimated that the total output of Coke in the two Connellsville regions for this year will be very close to 15,000,000 tons. The consumption of Furnace and Foundry Coke continues abnormally heavy, and it is scarce for prompt shipment. Best grades of Furnace Coke for shipment this year are held at \$2.85 to \$2.90 a ton at oven, and 72-hour Foundry at \$3.25 to \$3.50 a ton at oven. Some grades of Coke made outside the Connellsville region, and which are not as high in quality as Connellsville, are being sold at lower prices.

## Cincinnati.

FIFTH AND MAIN STS., Sept. 12, 1906.—(By Telegraph.)

**Pig Iron.**—The feature of the week is the continued demand for Iron into next year, and a very heavy tonnage has been placed covering the first six months. The demand for spot Iron continues active, and while possibly less pronounced than a week or two since, is nevertheless one of the strong factors in the present situation. Prices along this line are somewhat erratic, fluctuating considerably. The situation in the South, so far as the higher grades of Foundry Iron are concerned, is that none of the furnaces have much stock on hand and are shipping their output as fast as made in the lower grades. While there is some tonnage available for early delivery, there is apparently no surplus to speak of. Although nearly all of the furnaces are in arrears in making contract deliveries, the situation has not yet become serious, but it appears to be doubtful if such shipments can be kept up indefinitely, owing to the scarcity of cars and unsatisfactory labor conditions. This year's prices are apparently quotable from \$15.75 to \$16, Birmingham, while for the first quarter or half of next year there is said to be an almost unlimited tonnage coming from buyers at \$15, which probably represents as nearly as possible the true state of the market for such deliveries. Northern furnaces are said to be practically sold up for the remainder of this year and have done considerable business into next on an \$18 basis. Freight rates from the Hanging Rock District to Cincinnati are \$1.15, and from Birmingham \$3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$19.25 to \$19.50
Southern Coke, No. 2.....	18.75 to 19.00
Southern Coke, No. 3.....	18.25 to 18.50
Southern Coke, No. 4.....	17.50 to 17.75
Southern Coke, No. 1 Soft.....	19.25 to 19.50
Southern Coke, No. 2 Soft.....	18.75 to 19.00
Southern Coke, Gray Forge.....	16.50 to 16.75
Southern Coke, Mottled.....	15.75 to 16.25
Ohio Silvery, No. 1 (8 per cent. Silicon).....	23.15
Lake Superior Coke, No. 1.....	19.65 to 19.90
Lake Superior Coke, No. 2.....	19.15 to 19.40
Lake Superior Coke, No. 3.....	18.65 to 18.90

### Car Wheel Irons.

Standard Southern Car Wheel.....	\$25.50 to \$26.00
Lake Superior Car Wheel.....	24.50 to 25.00

**Coke.**—The market is strong and active. Some delays ascribed to car shortage are reported, yet nothing serious. Contracts for next year are coming forward in good volume at prevailing prices. We quote best brands of Connellsville and Virginia Foundry \$3.25 to \$3.50, f.o.b. ovens.

**Finished Iron and Steel.**—Considerable new work has recently developed, and the general situation continues exceedingly strong. Prices are firm and unchanged. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c.,

with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, 1/4-in. and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x 1/4 in. or heavier, 1.83c., in carload lots.

**Old Material.**—There is a heavy demand for Scrap in this market, and dealers are readily disposing of all surplus lines. We quote dealers' prices, f.o.b. Cincinnati, about as follows: No. 1 Railroad Wrought Scrap, \$14.50 to \$15 per net ton; Cast Borings, \$5 to \$6 per net ton; Steel Turnings, \$7 to \$8 per net ton; No. 1 Cast Scrap, \$13 to \$14 per net ton; Iron Rails, \$19 to \$20 per gross ton; Steel Rails, rolling mill lengths, \$15 to \$15.50 per gross ton; Relaying Rails, 56-lb. and upward, \$28 to \$29 per gross ton; Iron Axles, \$21 to \$22 per net ton; Car Wheels, \$17 to \$18 per gross ton; Low Phosphorus Scrap, \$17 to \$18 per gross ton.

## Cleveland.

CLEVELAND, OHIO, September 11, 1906.

**Iron Ore.**—While no sales of Ore have been made as yet for 1907 delivery, although the pressure upon the producers is great, some statements are abroad that consumers of Bessemer Ore have been given assurances they will be taken care of through next year. This is said to amount to an option upon a specified amount of Ore, without the price being named. Such a movement, if made, is considered to be in the interest of conservatism among the furnace interests and to avoid any haste in buying now, which might be regretted later. It is generally felt here that any hurry now to cover Ore needs for next year would force prices higher, on present prospects, than might be warranted a little later, and would, in consequence, cause disturbing conditions in the Ore and Iron industry. The need for Bessemer Ores of the higher grades has been the most acute, and brought about the pressure to buy for 1907 delivery. The figures have been compiled for the movement of Ore during August and up to September 1. These figures indicate that the movement for the season can hardly fall much below 35,500,000 tons, and may possibly exceed 36,000,000 tons by a small margin. Extraordinary conditions, however, have to be met this fall. The Coal movement is very late, and the grain movement is to be unusually heavy. The demand for boats will therefore be exceptional. Labor conditions are more acute and production is likely to be hindered, even as it has been up to this time. But the danger of an Ore shortage does not arise altogether from these conditions. The territory consuming Lake Superior Ores has been expanded, individual furnaces have consumed more through the year than formerly, and the number of furnaces in operation in this territory has been increased. In addition the percentage of low grade Ores is much larger and the actual yield of Iron is less.

**Pig Iron.**—There is a temporary lull in the buying of Foundry Iron. Some attribute this to the fact that prices are getting a little too high. At the same time furnace interests are not anxious to sell. The statement is made by one concern—and it seems to reflect a general condition—that no effort is being made to solicit business, but that it is difficult to supply the demands coming in. In a number of instances furnaces are quoting what might be considered prohibitive prices to keep the buyers out of the market. Price indications are seen in the fact that on Monday one lot of Northern No. 3 was sold at \$19.50, Valley furnace. Northern No. 2 for spot shipment is selling at variable prices, ranging from \$20 to \$21, Valley furnace. The ruling price seems to be about \$20.25. For advanced delivery the market is about \$18.50 to \$19.25. A few furnaces are still willing to sell at the lower figure. The higher price is quoted by those who wish to keep the buyers out of the market. Southern furnaces are quoting \$15.50, Birmingham, for No. 2 for future delivery, and some sales at that figure have been reported. In Basic and Bessemer recent events have demonstrated that the Steel Corporation is not able to control prices. It held for a time at \$17, Valley furnace, for Bessemer and Basic, but the demand of smaller consumers carried the prices up. Some Basic Iron, in lots of 1000 to 4000 tons, has been sold at \$18.25, Valley furnace. The same price has been obtained on Bessemer for first quarter delivery. It would now be extremely difficult to get much Iron for less than \$18.50. Makers want to hold the market below \$18.50 if possible, but profess their inability to do so and predict \$20 before the year is out.

**Coke.**—Coke is strong, with prices moving up. The best grades of 72-hour Foundry are selling at \$3.75 at oven as a minimum, to \$4, the ruling price, for delivery during the remainder of the year. Furnace Coke is selling at \$3. Most of the producers adhere to their position, recently taken, not to book any contracts for advanced delivery for the time being.



**Finished Iron and Steel.**—The Bar Iron market is ruled by two factors, one the shortage of unskilled labor at the mills, the other the high price of Scrap. One mill states that its output is only about 50 per cent. of normal, for lack of labor. At the same time Scrap has been climbing and the mills are forced to put up prices. The product is now selling at 1.70c., Pittsburgh. Bar Steel is strong at unchanged prices of 1.50c., Pittsburgh, for both Bessemer and Open Hearth. Forging Billets are getting steadily more scarce. The demand is growing and the mills are falling further and further behind their orders. During the week a small lot was sold at \$35, Cleveland. This seemed to exhaust the supply for the time, and other sellers, especially on lots ranging in the neighborhood of 1000 tons, are asking \$35 at mill in the East, which would bring the price here to \$38. The market, however, will probably range between \$36 and \$36.50, delivered in Cleveland. Rerolling Billets are also scarce. The difficulty to get Billets and the high prices charged have brought about an advance of \$1 in Blue Annealed Sheets. This has not affected stock prices so far. These rule at 2.15c. for No. 10 Blue Annealed, 2.80c. for No. 28 One Pass Cold Rolled and 3.80c. for No. 28 Galvanized. The increased productive capacity in Structural Steel is causing easier conditions to some extent, although for quick delivery some of the buyers of certain sizes are forced to go into the Eastern market to get their material. The large Plate mills are getting more completely sold up and deliveries are not quite so good. One more new boat order was placed in Cleveland during the week. This is for a Steel passenger steamer, which went to the Toledo yard.

**Old Material.**—Buyers of Scrap are holding back on account of the high prices, but dealers are able to hold up to the figures recently quoted. The following quotations represent dealers' prices to the trade, f.o.b. Cleveland, per gross ton: Old Steel Rails, \$17 to \$18; Old Iron Rails, \$25 to \$26; Iron Car Axles, \$20 to \$21; Heavy Melting Steel, \$17 to \$18. Per net ton: Cast Borings, \$9 to \$10; No. 1 Bushing, \$15; No. 1 Railroad Wrought, \$16.50 to \$17; No. 1 Cast, \$15 to \$15.50; Iron and Steel Turnings and Drillings, \$11 to \$12.

## New York.

NEW YORK, September 12, 1906.

**Pig Iron.**—The market has quieted down considerably, notably in Foundry Iron. Aside from one lot of about 3500 tons sold to a New England buyer, no larger transactions are reported. Inquiry for spot and prompt delivery is moderate, but the market is firm on the basis of \$20.50 to \$21 for No. 2 Northern, at tidewater. For delivery during the first half of next year the demand is light and slightly easier at \$19.50 to \$20 for No. 2 Northern. For Southern Iron \$19.75 to \$20 is demanded for spot, and \$19 to \$19.50 for the first quarter, No. 2 Foundry, tidewater.

**Steel Rails.**—No large Rail orders have been placed since last report, but quite a number of contracts for small operations have been closed. Among these are the following: San Antonio & Aransas Pass, 4200 tons; Seattle Electric, 1800 tons; Milwaukee Northern, 2100 tons; Los Angeles Railway, 2000 tons; Fairmont & Mannington, 1500 tons. All are for delivery in 1907. Announcement is made that the Isthmian Canal Commission received only one bid on its advertisement for 5000 tons of Rails, which came from the United States Steel Products Export Company, and the price fixed was \$29.15 per ton, delivered f.o.b. Baltimore. An alternate bid for delivery at Colon called for \$3.25 per ton more. The contract has not yet been awarded. It is likely that orders for Rails will be light for some time, as this may now be considered between seasons in the Rail buying movement. Standard Sections are unchanged at \$28, at mill.

**Structural Material.**—The American Bridge Company has been awarded the contract for the bridge requirements for the Harriman lines for 1907, taking at least 20,000 tons. This is the largest contract closed during the week. Quite a number of small transactions are noted, which aggregate probably 10,000 tons, among them being a bridge for the St. Paul Railroad, covering 4000 tons, which was secured by the Pennsylvania Steel Company. It is expected that the contracts for Structural Material for the huge buildings of the Singer Mfg. Company and the City Investing Company will be placed within a few days. We quote as follows on mill shipments of Structural Material, delivery at tidewater points: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.90½c. On Beams 18 to 24 in. the extra is 0.10c., and on Angles over 6 in., 0.10c. Beams and Channels out of stock are sold at 2.40c. to 2.50c.

**Bars.**—The situation among the Eastern rolling mills has shown no change during the past week. The strike, which keeps a number of them idle, has not been settled, and both sides appear to be as firm in maintaining their stand as at any time since the beginning of the controversy. Meanwhile the demand for Bar Iron is strong, and trade is active,

at full prices. Steel Bars are also active, with a particularly good demand for such shapes as are used in reinforcing concrete. Bar Iron is quoted at 1.74½c., tidewater, for best Refined, and Steel Bars at 1.64½c., tidewater, but six weeks is probably the earliest delivery that can be made on the latter.

**Plates.**—Local business is quite satisfactory, but is still confined to orders for moderate lots to meet the requirements of general consumers. Eastern mills are well supplied with work, and quotations are firmly maintained. Quotations are as follows at tidewater on mill shipments: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

**Cast Iron Pipe.**—The foundries are now booking orders for January and February delivery. This is a most unusual condition in the Pipe trade. Buyers, however, are so anxious to secure a supply of Pipe that they are making the best of the situation. Regular spring buyers are not yet in the market, but the ordinary trade is quite sufficient to keep order books filling up steadily further into the winter. Prices are very strong, with \$32 per net ton, at tidewater, the minimum on 6-in.

**Old Material.**—The entire Scrap market is exceedingly strong. Practically everything on the list is worth 25c. per ton more than last week. The railroads are not offering any large lots, while, on the other hand, manufacturers who have seldom or never used Scrap are now in the market, on account of the scarcity of Pig Iron. The stocks on hand in New York and Brooklyn yards are very low, and it is stated that it would be difficult to secure as much as 1000 tons of some grades in all these yards put together. Several large Western dealers who made contracts for the delivery of Heavy Melting Steel two months ago are now called on for shipments and are scouring the country to fill their requirements. They seem to have extreme difficulty in securing any considerable tonnage of either Heavy Melting Scrap or Old Steel Rails. Several inquiries are still pending for fairly large quantities of Heavy Melting Steel, but, on account of its scarcity, the prospective purchasers have not succeeded in securing the stock desired. More inquiries have come up the past week for Rolling Mill material than for several previous weeks. Cast Borings and Wrought Turnings are in considerably better demand. Cast Scrap and Stove Plate are apparently getting scarcer every day, while the demand is increasing. Quotations for New York and vicinity are approximately as follows:

Old Iron Rails.....	\$22.00 to \$22.50
Relaying Rails.....	26.50 to 27.00
Old Steel Rails, rerolling lengths.....	18.00 to 18.50
Old Steel Rails, short pieces.....	16.00 to 16.50
Heavy Melting Steel Scrap.....	16.00 to 16.50
Standard Hammered Iron Car Axles.....	26.50 to 27.00
Old Steel Car Axles.....	20.50 to 21.00
No. 1 Railroad Wrought.....	19.00 to 19.50
Iron Track Scrap.....	17.00 to 17.50
No. 1 Yard Wrought, long.....	17.50 to 18.00
No. 1 Yard Wrought, short.....	16.50 to 17.00
Wrought Pipe.....	13.00 to 13.50
Light Iron.....	9.50 to 10.00
Cast Borings.....	9.75 to 10.25
Wrought Turnings.....	12.50 to 13.00
Old Car Wheels.....	17.75 to 18.25
No. 1 Machinery Cast.....	16.00 to 16.50
Stove Plate.....	11.50 to 12.00
Grate Bars.....	11.00 to 11.50
Malleable Cast.....	15.75 to 16.25

**The Westinghouse Double Flow Turbine.**—For a number of years the Westinghouse Machine Company, Pittsburgh, Pa., has been engaged in the development of a new style of steam turbine, properly known as the double flow. This development work has been conducted along with the familiar Westinghouse-Parsons type, but quite independently thereof. A number of machines of this general type, some as large as 5500 kw., have already been constructed by the British Westinghouse Company for British power stations. The Westinghouse Machine Company has at the same time been working toward the perfection of this type of machine, with a view to greater compactness, suitability for certain speeds and wide ranges of steam temperature. The new turbine, as developed by the Westinghouse Machine Company, will not in any sense supersede the standard Westinghouse-Parsons type, but will be built conjointly therewith. Being particularly suitable for very large capacities and high running speeds this type of turbine will be employed to extend the builders' present line of turbine sizes, so as to secure greater flexibility in meeting demands for various sizes, speeds and frequencies in generating equipments. The manufacture of the standard Westinghouse-Parsons turbine will continue as usual, and the double flow type of turbine may therefore be regarded as a subdevelopment anticipating in a sense the demands of the trade.

## Metal Market.

NEW YORK, September 12, 1906.

**Pig Tin.**—The market during the week has exhibited but little difference from that of the preceding two weeks. Customers appear to be holding off in anticipation of lower prices, although on Tuesday of this week there was a fairly good inquiry in the market, some of which went at 40.37½c. To-day's market is slightly lower at 40.30c. The London Exchange closes at £185 for spot and £183 10s. for futures. The trade seems to be about evenly divided in its opinion as to the market's future, one division taking the stand that consumers having kept out of the market for so long a time while prices have held up, when they do come into the market again prices must necessarily advance. Other well informed men hold the view that trade has been so light the first few days of the month that the arrivals before the end of the month will aggregate so much that we will gain considerable metal in store. The arrivals so far this month aggregate 2186 tons, and there are afloat for American ports 1745 tons. It has been rumored in the trade that some low prices have been made quietly in the Straits.

**Copper.**—A scarcity of supplies, exceptional strength, a tremendous business and fear of higher prices have all combined to advance prices rapidly. In fact, owing to the anxiety to secure metal promptly, the price varies from day to day, but a fair range for Electrolytic would be 18.87½c. to 19.12½c. for cash, and for Lake 19.12½c. to 19.25c. A sale of a carload of Electrolytic has been made during the current week at 19.25c. cash. Casting Grades probably can be obtained at 18.50c. to 18.75c. The London market closes at £86 12s. 6d. for spot, £86 10s. for futures and £91 10s. for Best Select. The scarcity seems to grow worse instead of better, and it is feared that there may be more of a scramble for the metal during the later months of the year, notwithstanding a largely increased production. It is well known that the Lake Superior regions are producing considerably more Copper than a year ago, and the same may be said of the Southwestern producers. The production in the Butte District has increased rapidly, owing to the settlement of long standing suits. Confidence among consumers of Copper seems to be completely restored, and sales have been made for deliveries well into next year. The foreign demand is most excellent, although the exports for the first 11 days of this month only amount to 4172 tons. Additional reports regarding the exports during August bring the total for that month up to 20,433 tons.

**Pig Lead.**—The market is much stronger and sales have been made on the basis of 6c., New York. It is believed, however, that there is still some Lead to be had at between 5.90c. and 6c. The St. Louis market is very firm at 5.80c. to 5.85c. More than usual interest is now being taken in the foreign Lead market on account of the high prices there, to-day's price in London being £18 3s. 9d., an advance of 1s. 3d. since yesterday. The policy of the American Smelting & Refining Company continues unchanged, as do its prices to govern outstanding contracts.

**Spelter.**—The demand seems to be slightly better, and 6.05c. to 6.15c. is quoted in New York. In St. Louis the price is firmer at 5.95c. The London market is also stronger at £27 10s.

**Steel Alloys.**—Ferromanganese is quoted at the unchanged price of \$85 for prompt shipment. For 50 per cent. Ferrosilicon \$94.50 to \$95 is asked for next year's delivery, but any spot that could be obtained would command a premium. For 75 per cent. Ferro the European combination's price is \$150 per ton for delivery next year. October deliveries of Ferrochrome with 9 per cent. Carbon can be had at from \$122 to \$125. Manganese Silicon is quoted at \$104 to \$106. All of the above prices are f.o.b. Atlantic seaboard.

**Antimony.**—There is a good demand for nearby shipments at 25c. for Cookson's, and 24c. for Hallett's, with outside brands held at 22.50c. to 23.50c. For deliveries during the early part of next year, however, buyers are holding off.

**Aluminum.**—There is no change in the market, No. 1 Ingots being quoted at 36c.; No. 2 at 34c. per lb.

**Nickel.**—Large lots are obtainable at 45c., and smaller quantities at 55c. to 65c. per lb.

**Tin Plate.**—The price is unchanged at \$3.94, f.o.b. New York, and \$3.75, f.o.b. Pittsburgh, for 100-lb. IC Coke Plates.

**Old Metals.**—The most insistent demand is for the heavier materials, although all kinds of Scrap are selling freely. For particularly good assortments the following dealers' selling prices might be too low:

	Cents.	
Copper, heavy cut and crucible .....	18.25	18.50
Copper, heavy and wire .....	18.00	18.25
Copper, light and bottoms .....	16.25	16.50
Brass, heavy .....	12.75	13.00
Brass, light .....	10.00	10.25
Heavy machine composition .....	16.75	17.00
Clean brass turnings .....	11.25	11.75
Composition turnings .....	14.00	14.25
Lead, heavy .....		5.45
Tea lead .....		5.20
Zinc scrap .....		4.50

## Iron and Industrial Stocks.

NEW YORK, September 12, 1906.

The flurry in call money, which was noted at the time of going to press last week and which ran at one time as high as 40 per cent., was ended by the engagement abroad of large quantities of gold for importation. It is estimated at this time that over \$25,000,000 has thus been secured, and that more will be available if necessary. This change in financial conditions greatly strengthened the prices of stocks, and the stock market now presents a much more substantial appearance than during the previous two or three weeks. It is evident that the large speculative interests are convinced that the enormous crops of this season will bring such good business conditions during the remainder of this year that they can afford to ignore the heavy drafts made upon our financial resources from that quarter. Interesting developments during the week were advances in Cambria Steel stock in Philadelphia and in Republic and Colorado Fuel on the New York Exchange. Rumors were current that large holders of United States Steel stocks were making heavy purchases of Cambria stock; that Colorado Fuel would in the near future be placed in closer relations with the United States Steel Corporation; also that an exchange of Republic stock for Tennessee stock was to be made on terms quite favorable to the former. These reports were not confirmed, but nevertheless had their effect in advancing prices. The range of prices on active stocks from Thursday of last week to Tuesday evening of this week was as follows: Car & Foundry common 40 to 41½; Locomotive common 71 to 72¾; Steel Foundries preferred 44 to 46½; Cambria 36½ to 39½; Colorado Fuel 55½ to 59½; Pressed Steel common 52½ to 54½; Railway Spring common 53¼ to 56; Republic common 30½ to 37½, preferred 90½ to 103; Sloss-Sheffield common 77 to 80; Tennessee Coal 158½ to 159½; Cast Iron Pipe 45½ to 47; United States Steel common 45½ to 47½, ex-dividend, preferred 106½ to 107½. Last transactions up to 1.30 p.m. to-day are reported at the following prices: Can common 7¾, preferred 60; Car & Foundry common 40¾, preferred 101; Locomotive common 71, preferred 114; Steel Foundries common 11, preferred 46½; Colorado Fuel 57½; Pressed Steel common 53½, preferred 97¾; Railway Spring common 55½; Republic common 37, preferred 103; Sloss-Sheffield common 78; Tennessee Coal 159½; United States Cast Iron Pipe common 46¼, preferred 91; United States Steel common 46¼, preferred 106½.

The American Car & Foundry Company reports net earnings for the quarter ended July 31, 1906, of \$1,657,054, against \$625,312 for the corresponding quarter last year, an increase of \$1,031,742. Should the earnings for the next three quarters be as large as the July quarter the total for the 12 months will amount to \$6,628,212, equal to 15 per cent. on the \$30,000,000 common stock, after allowing for preferred dividends and before charging off renewal construction.

The sale of the Virginia & Southwestern Railway to the Southern Railway Company, which has just been announced, greatly strengthens the treasury position of the Virginia Iron, Coal & Coke Company. For its share in the Virginia & Southwestern, the Virginia Iron, Coal & Coke Company will receive more than \$2,000,000, which will bring the cash and cash assets in the treasury of the Coal & Coke Company above \$3,000,000.

Earnings of the Sloss-Sheffield Steel & Iron Company for the quarter ended August 31 decreased, owing partly to labor shortage, and the surplus after dividend was \$137,342, against \$217,423 in the corresponding quarter of 1905.

**Dividends.**—The International Silver Company has declared the regular quarterly dividend of 1 per cent. on the preferred stock, payable October 1.

The American Car & Foundry Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1.

The American Smelting & Refining Company has declared the regular quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1, and 1¼ per cent. on the common stock, payable October 15.

The Westinghouse Air Brake Company has declared the regular quarterly dividend of 2½ per cent., an extra dividend of 2½ per cent. and a special dividend of 2½ per cent., making 7½ per cent. for the quarter.

J. G. White & Co. have declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1.

The Crucible Steel Company of America has declared the regular dividend of 1½ per cent. on the preferred stock, payable September 29.

The New Haven Iron & Steel Company has declared a dividend of 30 cents a share, payable September 21.

The Otis Elevator Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock.

Instead of declaring, as had been expected, an increased dividend on the common stock, the directors of the Otis Elevator Company, at their meeting September 11 not only took no dividend action, but announced the issue of



6095 shares of new preferred stock, which will be offered to shareholders in the proportion of one share for every 20 shares held. The proceeds from the sale of the new preferred stock will be used to provide more working capital.

At the annual meeting of the stockholders of the La Belle Iron Works, Steubenville, Ohio, held in Wheeling, W. Va., September 11, the report submitted showed net profits for the year to be \$1,853,079.86, or about 50 per cent. in excess of the previous year. The surplus on June 30 was \$2,228,459.02. A resolution declaring a stock dividend of 8 per cent. was adopted. J. J. Holloway and William H. Hearne of Wheeling were elected directors, succeeding W. S. Foltz of New Castle and E. W. Mudge of Pittsburgh.

### The Allis-Chalmers Company.

The annual meeting of the Allis-Chalmers Company was held in Jersey City September 6. The financial report of operations for the fiscal year ended June 30, 1906, was submitted. As the previous report covered operations for the 14 months ended June 30, 1905, the following comparison made with that report must necessarily be read with some allowance for the disparity in length of time covered:

	1906. (12 mos.)	1905. (14 mos.)	Decrease.
Net profits.....	\$648,161	\$1,146,981	\$498,820
Total charges and depreciation.....	1,036,583	1,077,999	41,416
Deficit .....	\$388,422	†\$38,982	*\$457,464
Special charges.....		345,528	345,528
Deficit .....	\$388,422	\$276,546	*\$111,876
Previous surplus.....	348,289	624,835	276,546
Final deficit.....	\$40,133	†\$348,289	*\$388,422
Asset account.....	†197,614		*197,614
P. and L. surplus.....	\$157,481	\$348,289	\$190,808

\* Increase. † Surplus. ‡ The asset account covers expenditures in the development of new lines of manufacture prior to June 30, 1905, the amount of which is now carried as an asset to be charged to future operating expenses.

The general balance sheet as of June 30 compares as follows:

Assets.			
	1906.	1905.	Increase.
Real estate, good will, &c....	\$34,401,753	\$30,535,770	\$3,865,983
Bonds and shares.....	255,700	165,000	90,700
Bullock Electric Mfg. Company and patents.....	662,322		662,322
Bills and accounts receivable	4,449,185	3,628,778	820,407
Material and work in process	5,437,121	3,478,725	958,396
Cash .....	1,151,153	516,483	634,670
Totals.....	\$46,357,234	\$38,324,756	\$8,032,478
Liabilities.			
Capital stock.....	\$35,970,000	\$35,970,000	
Account Bullock Company...	1,170,500	110,128	\$1,060,372
Notes payable.....	*6,460,000		6,460,000
Accounts payable.....	1,559,418	1,080,051	478,467
Depreciation reserve.....	1,039,835	815,288	224,447
Surplus .....	157,481	348,289	†160,808
Totals.....	\$46,357,234	\$38,324,756	\$8,032,478

\* Provided for by sale of bonds. † Decrease.

President Walter H. Whiteside says: "By reason of the development of new lines of machinery and the increase in our manufacturing facilities we have been enabled in the past year to secure about \$4,500,000 of orders for classes of machinery not hitherto manufactured by this company, while a much larger amount might have been booked had the new West Allis Works been completed within the time limits of the contracts therefor. Notwithstanding the lessened demand for certain classes of machinery formerly constituting an important part of this company's production the unfilled orders on hand June 30, 1906, amounted to \$5,500,000 more than at the same time in the previous year."

President Whiteside also explained the recent plan for financing the purchase of the Bullock Electrical Works, at Cincinnati, and enlarging the capacity of the company by the authorization of \$15,000,000 first mortgage 5 per cent. 10-30-year sinking fund gold bonds. The stockholders subscribed for \$902,000 bonds and the underwriting syndicate, formed in connection with the issue, was allotted \$9,648,000 bonds. The remaining \$1,450,000 of the \$12,000,000 bonds proposed to be issued at this time are under option to the same syndicate in consideration of the latter's agreement to advance to the company the whole or any part of \$1,700,000 cash, should

it be required, to pay liabilities maturing before the stockholders and syndicate subscriptions, payable in monthly instalments extended over from six to eight months, would be available. The remaining \$3,000,000 of the total authorized bonds are reserved under restrictions for the acquisition of new property. The sale of the bonds has fully provided for temporary loans to the amount of \$6,460,000.

The net cash working capital is stated to be \$9,478,041.

During the fiscal year there have been additions to the plant amounting, net, to \$3,865,983, and for development of new lines of manufacture \$464,708. The increase in the net current assets is placed at \$2,935,006. The total increase of assets in the year was \$7,356,398.

The retiring directors were re-elected, and President Whiteside was chosen to fill the vacancy caused by the resignation of James Stillman, president of the National City Bank, New York. Mr. Stillman resigned some months ago.

### Labor Notes.

The strike which was declared by the molders against the members of the National Founders' Association at Chicago and Milwaukee on May 1 has led to the introduction of a large number of molding machines in practically all of these plants, and their use has been a potent factor in successfully carrying on this conflict from the foundrymen's standpoint up to the present time. At the time the strike was declared there were 56 machines in use in the 17 struck shops at Milwaukee. During the past four months 125 machines have been added to the equipment of these plants and orders for additional machines have been placed with manufacturers and will be installed as rapidly as received. At Chicago it is conservatively estimated that 100 machines have been purchased, and further additions will be made in the next few months. The machines generally are being operated by "handy men" that remained at work, and so proficient have they become that the machines and their operators will be continued as permanent fixtures in these plants. At Milwaukee the founders are operating at an average of 75 per cent. of their normal capacity, while at Chicago six or seven plants are on in full and the remainder are averaging 80 per cent. of their normal output. At Milwaukee three temporary restraining orders have been granted the Vilter Mfg. Company, the Bucyrus Company and the National Electric Company, while only one restraining order thus far has been issued in Chicago.

The machinists' strike at Toledo is still on, with no prospects of reaching a settlement at present. This strike affects about 300 workmen and was precipitated because of the company's refusing to reinstate two men who had been discharged for cause.

Branches of the National Metal Trades Association have been organized at New Haven and Hartford, Conn., and Springfield, Mass., with a membership of about 60. Applications are being received at these branches for membership, and the outlook is good for strong associations.

The courts at Pittsburgh have issued a restraining order forbidding the Sheriff to proceed with the sale of the Meyersdale Sheet Steel Company at Meyersdale, Pa., on a judgment for \$14,000 obtained by a local bank. The order is the result of a petition filed by A. F. Baumgarten and T. J. Costello, who together own stock to the value of \$14,500. They claim that the company's plant is worth \$50,000, while its total indebtedness is \$30,000. A receiver will probably be appointed.

The Pennsylvania Steel Company has closed a contract for the lease of the blast furnace of the Tidewater Steel Company at Chester, Pa., and will run it on ferromanganese. The lease does not include the Tidewater steel plant.

The Warwick Iron & Steel Company is negotiating for the lease of the old Anvil furnace at Pottstown, Pa., which has been out of blast since 1893.

### Regulations for Free Alcohol Users.

WASHINGTON, D. C., September 10, 1906.—The Commissioner of Internal Revenue, John W. Yerkes; the Chief Chemist of the Bureau, Dr. C. A. Crampton, and Representative E. J. Hill of Connecticut, have returned from a tour of Great Britain, France, Germany and Belgium, undertaken for the purpose of gathering data for use in connection with the drafting of regulations for the enforcement of the recently enacted law granting free denatured alcohol for industrial purposes, which takes effect January 1 next. Commissioner Yerkes announces that the regulations will be ready for promulgation by October 1, which will give manufacturers and other users three months in which to familiarize themselves with all the details before the new law goes into force.

#### Liberal Regulations.

It is the commissioner's intention to make the regulations as liberal as possible, consistent with the proper safeguarding of the revenues. He believes that it was the intention of Congress to give American manufacturers all the advantages to be derived from a free alcohol policy unhampered by unnecessary restrictions. At the same time, however, he is fully alive to his own responsibility for the collection of the spirit revenue and he takes the very rational position that it will be better for the industries of the country to have the enforcement of the new law so safeguarded at the outset that it will not be discredited and perhaps repealed by Congress before its merits have been thoroughly tested. There is good reason to believe that with the exceedingly well organized internal revenue service of this country the commissioner will find it practicable to prepare more liberal regulations than are now in force in any of the leading European countries, and manufacturers who have heretofore found the high tax on grain spirits a bar to their competition with foreign producers in the markets of the world will be able hereafter to meet their rivals on at least an equal footing so far as taxes and regulations are concerned. The only doubtful factor will be the cost of denatured alcohol, but the leading promoters of the free alcohol movement express the utmost confidence that denatured spirits will in a short time be made and sold in the United States at a lower cost than in any European country.

#### Foreigners Interested in New Law.

The foreign Governments, especially of Great Britain, France, Germany and Belgium, are following the development of the free alcohol policy in the United States with the closest possible attention. The legations in this city furnished their respective Governments with copies of the new law even before it was printed in official form, and are preparing to forward the commissioner's regulations as soon as they are issued. The foreign officials, as well as manufacturers and other users of denatured alcohol, are interested in two important phases of the development in the United States: 1, The extent and character of the competition with foreign industries that will result under the new law; and, 2, the effect on the price of American wood alcohol for export on its adoption by this Government as a general denaturant. The question of competition is not of such immediate importance as the price of wood alcohol, which is now largely exported for use as a denaturing material in all European countries.

Very little alcohol is now being used abroad for the propulsion of automobiles. Elaborate tests have demonstrated the superior thermal efficiency of alcohol to gasoline, but the requirement of the automobile for a fuel with which the internal combustion engine can be promptly started without a few moments' "warming up" has not yet been fully met in any device now on the market. German manufacturers of these engines do not hesitate to express confidence that this difficulty will soon be overcome, and the opinion among experts appears to be quite general that the ultimate use of denatured alcohol as fuel for automobiles will depend solely upon the question of the cost of the spirits. The largest consumption

of denatured alcohol for power purposes is reported in Germany in the rural districts, large quantities being employed for heat, light and power, the cheapness of alcohol and relatively high cost of kerosene and gasoline contributing to increase the consumption.

Special efforts are now being made by Great Britain and France to cheapen the cost of denatured spirits for industrial purposes. In England a bill removing certain restrictions, and providing that the cost of supervision shall be paid by the Government instead of by the consumer, has had its second reading in the House of Commons and seems in a fair way to become a law. In France the Government has for some months sought to cheapen the cost of denaturing, and maintains a standing offer of several large cash prizes for the discovery of cheaper but equally efficient denaturing materials.

One of the most interesting features of the forthcoming regulations will be the provision regarding the use of special denaturants. It is not possible at this writing to state whether this feature will be covered in detail by the regulation, but it seems probable that the code will require that manufacturers desiring to use special materials for denaturing shall make application to the Commissioner of Internal Revenue and, if the material is approved, special regulations for the use thereof will be issued.

W. L. C.

### The Southern Steel Company.

The Southern Steel Company, whose main office is at Birmingham, Ala., has purchased all the capital stock of the Lacey-Buek Iron Company and the Chattanooga Coal & Iron Company. The addition of the properties of these interests gives the Southern Steel Company the following plants and lands:

One 300-ton blast furnace at Gadsden, Ala.  
One 200-ton blast furnace at Chattanooga, Tenn.  
One 200-ton blast furnace at Trussville, Ala.  
One 600-ton open hearth steel plant at Gadsden, Ala.  
One 36-in. blooming mill at Gadsden, Ala.  
One finishing plant at Ensley, Ala., with a daily capacity of 300 tons, consisting of wire rods, bar wire, field fencing and wire nails.  
3200 acres of coal land at Virginia, Ala.  
3100 acres of coal land at Altoona, Ala.  
350 acres of coal land at Graves Mines, Ala.  
2600 acres of coal land at Pales, Ala.  
16,000 acres of coal land at Dunlap, Tenn.  
4600 acres of ore land at Gaylesville, Ala.  
800 acres of ore land at Porterville, Ala.  
2000 acres of ore land at Crudeup, Ala.  
2800 acres of ore land at Estelle, Ga.  
1800 acres of ore land at Oremont, Ga.  
Limestone quarries adjacent to each furnace.  
850 coke ovens, with others building.

All of the company's former plants were new and modern. The two furnaces that it has just purchased are likewise modern in every respect, the Chattanooga furnace having been completed but a few months ago.

The officers of the company, as recently elected, are as follows: C. P. Perin, chairman; Moses Taylor (of Kean, Van Cortlandt & Co., New York), president; E. T. Schuler and C. E. Buek, vice-presidents; G. H. Schuler, treasurer; R. D. Carver, secretary. Directors, Oakleigh Thorn, Moses Taylor, Robert Van Cortlandt and C. P. Perin, New York; John Bindley, Pittsburgh; C. Van Camp, Indianapolis, Ind.; H. B. Schuler, Chicago, Ill.; E. T. Schuler, Gadsden, Ala.; G. H. Schuler and C. E. Buek, Birmingham, Ala.; J. D. Lacey, St. Louis, Mo.

The cast iron pipes originally used in the Berlin gas system were some years ago replaced by wrought iron pipes, to avoid the serious accidents which had occurred previously, due to breaks. In the new system no precautions were taken against rusting, and at the end of a few years the pipes were entirely eaten through, and upon examination, in some places there were found envelopes composed entirely of rust. Protection by a coating formed of a mixture of tar, sand, lime, powdered clay and pitch was then tried, and very good results were obtained, pipes buried twelve years having recently been found perfectly preserved.



**The American Smelting & Refining Company.**

The annual report of the American Smelting & Refining Company for the fiscal year ended April 30, 1906, shows an increase of \$1,262,546.76 in net earnings, or 14.2 per cent. in excess of those of the preceding year. The comparative statement of income account is as follows:

	1906.	1905.	Increase.
Earnings .....	\$11,665,885.58	\$10,506,683.17	\$1,159,202.41
Deduct taxes and general expense..	675,945.03	729,223.61	153,278.58
Ordinary repairs and betterments .....	828,582.43	878,648.20	150,065.77
Total deduction	\$1,504,527.46	\$1,607,871.81	\$103,344.35
Net earnings.....	\$10,161,358.12	\$8,898,811.36	\$1,262,546.76
Less employees' profit sharing fund.....	449,203.72	216,815.76	232,387.96
Totals.....	\$9,712,154.40	\$8,681,995.60	\$1,030,158.80
Appropriation for new construction, improvements and metal stock account	\$938,090.55	1,063,083.80	124,984.25
Balance net income	\$8,774,054.85	\$7,618,911.80	\$1,155,143.05
Deduct dividends...	6,750,000.00	6,000,000.00	750,000.00
Surplus for year	\$2,024,054.85	\$1,618,911.80	\$405,143.05
Surplus for previous year .....	8,458,720.03	6,839,808.23	1,618,911.80
Total surplus...	\$10,482,774.88	\$8,458,720.03	\$2,024,054.85

\* Does not include any appropriation to metal stock account.  
† Decrease.

President Daniel Guggenheim, in his annual report to the stockholders, states:

"There has been expended on the property of the company during the year for ordinary repairs, betterments and extraordinary improvements, newly acquired properties and additional plants the sum of \$1,766,681.98. Following the practice of the past two years, this whole amount has been deducted from the profits of the year. Notwithstanding these deductions, the undivided surplus account has been increased by \$2,024,055 and now amounts to \$10,482,775, about one-half of which is represented by cash in banks and trust companies and the balance by other quick assets. The valuation on the books of the company of silver, lead and copper in ores is so much below the present market value that the directors have deemed a further credit to metal accounts unnecessary this year.

"The value of the property on the books of the company has not been increased. However, in addition to new construction and improvements of a miscellaneous nature made at the various plants during the past year, the following notable additions have been made: Perth Amboy, N. J., new copper refining plant with a capacity of 75,000,000 lb. annually; Omaha, Neb., new copper converting plant; Leadville, Colo., increased capacity of lead smelter equal to 7,500 tons of charge per month; Colorado and Perth Amboy, additional land giving increased facilities.

"Although it had been thought the earnings of the American Smelters Securities Company would not equal its fixed charges during the first year of its existence, for the reason that many of its large properties were still in the development and construction stage, yet the directors are pleased to report that the earnings of the American Smelters Securities Company have exceeded its fixed charges by about \$500,000, and consequently no demand has been made on account of the guaranty of your company on the series 'B' preferred stock of the American Smelters Securities Company.

"The increase in the value of metal stocks during the year, amounting to about \$3,000,000, is due to the enlarged capacity of the works of the company and the development of mineral resources tributary to the plants of the company. The stockholders will be interested to know that the gold refined by this company during the past year amounted to over \$50,000,000.

"The company has not included in its financial statement earnings from the following sources: 1. Use of Huntington and Heberlein patents. 2. Mining properties of the company. 3. Stock of the American Smelters Securities Company. 4. Stock of the United States Zinc Company. 5. Stock of the United Lead Company. The directors have thought it best to await a more complete working out of their plans in connection with these various investments before transferring their earnings to the credit of profit and loss account of this company. Since the close of the present fiscal year (April 30, 1906) the directors have effected a sale of the portion of the stock of the United Lead Company owned by this company, and therefore the profits accruing from this sale will be carried into the accounts of the fiscal year ending April 30, 1907.

"From the amount of \$499,203.72 charged to profit and loss for the benefit of profit-sharing employees the Board of Directors have set aside the sum of \$68,000 as the beginning of a fund whose uses will be determined later, but which in general will be an insurance or pension fund for the benefit of employees of the company at its various works."

**Central American Notes.**

SAN JOSE, C. A., August 29, 1906.—For these people there was evidence of such staying qualities in the steel buildings of San Francisco during the recent earthquakes that many are thinking of putting steel into their calculation for future construction work. The piers at Champerico, Acajutla and La Libertad are undergoing repairs, and the one at Salina Cruz will be replaced by a steel structure. The Salina Cruz pier will connect by rail with the Tehuantepec Railroad across the Isthmus to the Caribbean Sea (or Atlantic side) at Coatzacoalcas. Most of the stations along this route will have steel frame buildings. At the main points there will be "aduanas," or custom houses, which will be of iron and steel as well. Much traffic is expected to go over this line to and from the United States once the two steamer lines are in full working order. Another line will connect with Japan and Hawaii.

There is no doubt that the late short-lived war in Central America (Guatemala-Honduras-Salvador) will be somewhat of a setback to these countries, but undoubtedly they will soon outgrow it. Foreign interests were scarcely troubled at all, and work is now going on as usual on the Salvador Central and the Northern railroads. Most of the fever on the Atlantic coast has died out, and the rebuilding on the Cortez Railroad continues.

Buenos Aires is importing thousands of Italian laborers to work on the Transandine line and its branches north and south. In fact, Italians are trying to boom their hardware, machinery, &c., in the south, just as Germany is doing in Rio Grande do Sul, Brazil.

Secretary of State Root's visit to the South American countries will surely help to bring about a better understanding with our people, both commercially and politically. Our exporters will now, more than ever, find it useful to study Latin-American business needs and ways, as also the Spanish language.

Bolivia will prove to be a good field for American exports and general enterprise. It is a country that is practically in a virgin condition, being very large and having fine rivers, few roads as yet, but immense natural resources. It needs machinery, above all agricultural and mining machinery, and nearly every kind of hardware manufactured in the United States. The people are slow but teachable. There is no good reason why lines of American steamers could not pay on the Madeira and Mamore rivers, carrying out through the Amazon native stuffs, rubber, coffee, sugar, fruits, fibers and refined gold and silver ores in exchange for our products. Contrary to the common idea, much of the country is very high and therefore quite cold in the southern and central plateaus, which are sometimes 14,000 and 15,000 ft. high.

Large deposits of iron ore are reported to exist in Togo, a German colony in South Africa.

## The Machinery Trade.

NEW YORK, September 12, 1906.

Several new projects have come to the front within the past week that will necessitate the purchase of much equipment, and for others for which building plans have been completed the machinery specifications are being prepared. From the number of these on the tapis at the present time there is every indication that there is to be a further increase in the demand for machinery, which is now so great. Many of the houses are talking of record weeks and months, and doubtless in many cases records are being made. One of the most important builders reports the largest business in every department during August, making that the banner month of its career.

The fact that the United States has obtained the advantage of Spain's minimum tariff schedule in return for reductions afforded under section 3 of the Dingley Tariff act, by which Spain can send her wines to this country cheaper than formerly, is one of unusual importance to the machinery trade, and especially to those who make a practice of exporting machinery products to Spain. According to the treaty signed between the two countries, metal and all manufactures of which metal is a chief component will be admitted to Spain at the reduced rate offered by that country in its most favored nation treaty. A large exporter of American machine tools to Spain said last week that the change in the tariff rates would mean a large amount of additional business coming to machine tool men in this country. The machinery trade with Spain has been especially good of late, notwithstanding the fact that tariff rates have been somewhat higher than those offered to some other European machines. When the cost of transportation is taken into consideration, it is a matter of some pride to American manufacturers to realize that they have been cutting in on the trade with Spain regardless of the German competition, which is especially strong throughout Europe. The fact that Spain has been a large buyer in the machinery market is largely due to the development of the manufactures of that country. It is only lately that Spain has come forward as a manufacturing nation, and those who have gone into business there within the last few years have met with such success that they have been obliged to increase their producing capacity. Business along these lines has been especially good also within the last few years, and consequently there has been an insistent demand from that source for machinery. Some of the German machinery firms who have been making a practice of importing American goods into Europe, have been doing a large business with American machine tools in Spain, and many manufacturers here have been selling their machinery direct through agents in that country. The announcement of the reduced tariff has been a welcome one to both manufacturers and agents alike, as they will now be able to introduce a stronger competition with the German producers who are catering for the Spanish trade. It may be interesting to note in this connection that business in American machinery is good throughout all Europe, and machinery men who have returned from there this summer state that in most of the European countries manufacturers are nearly, if not altogether, as busy as the trade is here. Were it not for the fact that the demand here is very strong, it is thought in the trade that our export business, especially in some lines of machine tools, would be much larger, but in many cases European buyers cannot wait for deliveries.

### Association Notes.

The call for a special meeting of the National Supply and Machinery Dealers' Association, to be held at Detroit on September 26 and such following days as may be required, is causing considerable comment in the trade, the general opinion being that important questions have come up that it will be of advantage to the machinery and supply dealers to have settled before the October meetings of the National Machine Tool Builders' Association. It is said in the trade that among the matters to be discussed at the meeting will be the question of commissions and also advance of prices. It is the contention of the dealers that they should have a voice in the adjustment of these matters, and, as has been shown by previous action, they are enabled to make their demands heard since the formation of their association.

On Monday the M. and S. Credit Association, which is the local association of the machinery and supply dealers, met at the Astor House, New York, with Henry C. Prentiss, vice-president, presiding in the absence of Charles A. Moore, Jr., president, who is now abroad. About all the prominent machinery dealers of the city were present at the meeting. In order that the members may not be inconvenienced by attending meetings to discuss matters that do not affect their immediate business the association has formed two committees, one a machinery committee and the other a supply committee. The machinery dealers constitute the former and the supply

dealers the latter committee, but all members of the association can, if they desire, be members of both committees, the division being made merely to simplify matters, so that a machinery dealer may, if he desires, not interest himself in matters which are taken up by the supply men, and *vice versa*. The machinery committee will hold a meeting next week at one of the downtown clubs.

### Railroad Improvements.

It is probable that before long the trade will hear of the purchase of a good deal of equipment for a railroad to be constructed for the Norfolk & Washington Air Line Railway Company, which purposes to extend its system by building a line from Washington, D. C., to Esperanza, Md. The company has awarded a contract for the entire construction of the road to D. E. Baxter & Co., who have their main offices at 27 William street, New York. The road will be 64 miles in length, and the entire line will be laid with 70-lb. steel rails and standard ties. There will be a car repair plant, and everything that goes to make a complete steam railroad system of that size. Arrangements for the construction of the repair plant have not been made as yet, nor have plans been drawn in any but a preliminary way. G. S. Brantingham, who is the manager of the construction department of D. E. Baxter & Co., has charge of the arrangements for the proposed road, and he will also direct the work when it is under way. The line will give the company a direct outlet from Washington, and the West to Norfolk and the South by a much shorter route than exists at present, and it is expected that freight and passenger facilities will be much cheaper. It will be some time, it is thought, before the company will come into the market for the necessary equipment for the car plant, but it is highly probable that most of the important buying will be done in this city where the engineering company has its headquarters.

The Prince Edward Island Railroad has received bids for the construction of a new car shop at Charlottetown, P. E. I.

The Syracuse, Lake Shore & Northern Railroad is preparing to build a line from Fulton to Long Beach, N. Y., and it is expected that before long the company will come into the market for considerable machinery. Some inquiries have been made in the market in a general way with a view to ascertaining what power equipment will be available, but it is understood that no definite plans have been made as yet for a power house. T. H. Mather, who has offices in the Onondaga Building, Syracuse, N. Y., is the chief engineer of the company, and R. A. Dyer is the electrical engineer. Further than an announcement that the road is to be built the trade has no definite information regarding the requirements, but it is understood that there will be no delay and perhaps before very long the company will be heard from.

### New Industrial Plants.

Plans are being prepared by the William H. Jackson Company, 229 West Twenty-ninth street, New York, for a new plant to be erected in the Bush Terminal section of Brooklyn. The company has purchased a piece of property 300 ft. front on Fortieth street and extending through to Forty-first street. The company makes a specialty of turning out the finest grades of ornamental iron and bronze work, and in addition manufactures fireplace fixtures and a general line of architectural ironwork, the latter branch of its business having developed with the bronzework so much of late that it has been deemed necessary to get more space and better shipping facilities. The company has recently completed jobs on some of the most important buildings in the East, and has under way other important work of the kind which will make it necessary to obtain additional floor space as soon as possible. Preliminary plans being prepared by the company's engineering force call for a plant embracing 175,000 ft. of floor space. The main building will be 80 x 130 ft., five stories in height, and there will be a foundry building, 100 x 125 ft. The company intends installing a power plant of about 300 hp., which will be the main plant, and there will be in addition an electrical power plant of a fair size. There will also be a complete compressed air equipment and an up to date outfit of general machinery, such as is required in that class of work. When the new plant is completed, which will be as soon as the company can make the necessary arrangements, the available equipment now in the New York plant will be moved to Brooklyn; but in addition the company will obtain considerable machinery to equip its added floor area, which will put the manufactory among the first of its kind in the country. In addition to obtaining a better equipped plant, the Jackson Company will have the benefit of the excellent freighting and docking facilities afforded by the Bush Terminal, which, by the way, is rapidly developing as a manufacturing center.

The Globe Foundry Company, Port Chester, N. Y., has completed plans for its new plant at Huntington, W. Va., and will probably soon prepare specifications for the machinery it will require to equip its new buildings. Quite a large amount of machinery will be required for the plant,



as the company intends to equip it with new machinery throughout, and expects to spend from \$75,000 to \$100,000 in the construction of the buildings and purchase of machinery. The plant, which will be equipped for the manufacture of soil pipe and fittings, steam and hot water boilers and cast iron radiation, will consist of a machine shop, 50 x 160 ft.; foundry, 93 x 303 ft.; cupola room, 40 x 62 ft.; cupola building, 40 x 50 ft.; millroom, 60 x 64 ft.; office building, 20 x 50 ft.; sand and coke bins, 20 x 160 ft., and storage sheds, 50 x 240 ft.

Aside from the power equipment, there will be but little new machinery required for equipping the plant which Hitchings & Co., New York, are to erect at Elizabeth, N. J., as it is the intention of the firm to concentrate its two present plants at Jersey City in the new one. The proposals for the power equipment will be sent out by the engineers, Dean & Main, Boston, Mass., who will soon ask bids for two 78-in. horizontal return tubular boilers, two 200 hp. high speed engines, with a 150-kw. generator on each shaft, various pumps and piping, both for steam and water, induction draft fan and other apparatus that generally goes into an up to date power plant. The new plant, which will be devoted to the manufacture of greenhouses, will consist of seven buildings, 34 x 149 ft., 66 x 119 ft., 60 x 205 ft., 99 x 320 ft., 60 x 205 ft., 100 x 150 ft. and 40 x 50 ft., respectively.

Jenkins Brothers, manufacturers of valves, whose main offices are 21 John street, New York, are preparing to erect a large plant in the town of St. Paul, near Montreal, Canada, for the manufacture of their products, and the firm of Brown & Vanance, architects, Montreal, are preparing the plans. The company has bought a tract of land, 350 x 450 ft., admirably situated between the tracks of the Grand Trunk Railroad and the Lachine Canal, and it is proposed to erect a complete valve manufacturing plant on it. The main building will be constructed of brick and will be 50 x 200 ft., three stories in height. There will also be a foundry building, 64 x 150 ft., and an engine and boiler house, 45 x 60 ft. The company expects later on to build a second foundry, 60 x 100 ft., and it is probable that the plant will be generally enlarged in the future, as it is the company's intention to take care of its large Canadian business through its plant there. For some time past Jenkins Brothers have maintained a tool working plant adjacent to their manufactory at Bridgeport, Conn., and a large quantity of tools to be used in the Canadian plant is being made there. It is expected that shipments of machinery will be begun about April 1, and there are some inquiries in the trade now, through the company's New York office, for the necessary equipment.

The Frevert Machinery Company, 18 Dey street, New York, is experiencing an excellent demand for its new cranes. The company has recently received an order from the Penn Iron Works, Vulcan, Mich., for a 30-ton electric traveling crane which is to run on circular tracks. An order has also been received from the Traylor Engineering Company, New York, for a 48 in. x 36 ft. screw cutting engine lathe, for its new plant at Allentown, Pa.

J. G. White & Co., New York, have been appointed by the Government to draw up new plans and specifications and to assist the federal engineers in the selection of designs for the new 12,000-hp. plant which is to supply light, heat and power to the Congressional Buildings in Washington, D. C. Considerable difficulty has attended the efforts of the Government to place the contract for this work. Seven bids were received, but were rejected July 2. As soon as the plans are completed new bids will be asked by the Government.

The Blacksburg Power & Supply Company, Blacksburg, Va., which was recently organized, will erect an electric light, ice and cold storage plant as soon as possible. The company is now in the market for electric light and ice plant machinery, to include a gas producer and engine of from 100 to 125 hp. D. H. Keister is manager.

Bids will be received by the Department of Water Supply, Gas and Electricity of the city of New York, 13 to 21 Park row, September 26, for the construction of a machine workshop and office. The security required is \$15,000.

The following orders have been received by the Hooven, Owens, Rentschler Company, through its New York office, at 39 Cortlandt street: 600 hp. engine, for the Mohawk Valley Cap Company, Utica, N. Y.; two 450 hp. engines, for the town of North Attleboro, Mass.; 1500 hp. engine, for the Argentine Luebracho Company, Buenos Ayres, and two 400-hp. engines, for the Gillette Safety Razor Company, Boston, Mass. All of these engines are for direct connection, except that of the Argentine Luebracho Company, which will be designed for a rope drive.

#### Business Changes.

Owing to the increased demand for its products throughout the Southern States the Chicago Pneumatic Tool Company has opened an office at 1012 Memphis Trust Building, Memphis, Tenn., which is under the management of J. Francis Small. The Morse Brothers Machinery Company, Denver, Colo., has been appointed agent for the company in the Denver territory.

The Cushman Chuck Company, Hartford, Conn., has moved its New York office from 38 Cortlandt street to 18 Dey street, where it has secured more commodious quarters and better space for the display of its lathe and drill chucks.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 11, 1906.

Manufacturers and dealers in machinery and machine tools have noted a much better demand the past week. Business appears to be taken hold of more aggressively, and while sales have been confined more particularly to individual tools, the number has been greater. The inability to make satisfactory delivery still continues to be the stumbling block in the way of quick sales, and prospective purchasers are apt to shop around considerably in hopes of getting earlier shipping dates, but with practically every manufacturer loaded up with business this is hard to obtain, particularly in the best grades of tools. Occasionally dealers will let their customers have a tool from their floors, but this is not desirable owing to the inability to get another tool for display purposes from the manufacturer with any degree of promptness.

Absence of specifications for equipment of any size continues, although there is a good prospect of some fairly good lists at an early date from several plants for additional equipment. Railroad business has been inactive the past few weeks, although an early development of some business from Southern territory is looked forward to. The local railroads have about completed their general buying for this year, although no doubt purchases will continue to be made from time to time as the necessity arises.

Manufacturers of all classes of machinery and tools continue taking on a good volume of business. In some cases the orders taken during the month of August far exceeded the productive capacity, and in such cases deliveries have materially hardened. No general improvement in deliveries is to be noted in this territory, as the volume of business coming in is usually equal at least to the capacity of the plant.

The foreign demand is somewhat stronger, particularly in the line of special tools. Manufacturers of such tools and special machinery have booked some good orders for export and are encouraged with the prospects for further business. While there appears to be a somewhat better demand for the general line of so termed standard machine tools, manufacturers are so fully occupied with their domestic business that but little attention is being paid to this branch of the trade.

While there is some slight improvement in the demand for engines and boilers, particularly of the medium and smaller powers, there is, in the opinion of the trade, still room for considerable betterment. There has been more or less dullness in this branch of the trade all summer, but with some good business in sight an early improvement is looked forward to.

Second-hand machine tools continue in good demand, the only difficulty on the part of the dealers being the ability to keep up stocks of the better grades of tools. Buyers of tools of this class want prompt deliveries, which cannot be had from manufacturers of new tools, and if such deliveries cannot be had the order is frequently not placed.

A large tonnage continues to be offered to both iron and steel casting plants. The latter have more business on hand than can be taken care of and good deliveries are hard to obtain. Gray iron foundries are all working to their best capacity and manufacturers frequently complain of their inability to obtain castings, particularly those of the heavier types, with satisfactory promptness. The smaller jobbing foundries have been able to make good deliveries, owing principally to the class and variety of the work coming in, which enables them to better take care of hurry jobs.

The Southwark Mfg. Company will erect at South Camden, N. J., two buildings for the manufacture of whitening. They will each be one story high, one 65 x 275 ft., and the other 41 x 141 ft., built of brick, to be used for a dry-house, coal storage house, machine shop, millroom and shipping room. The company will be in the market at an early date for the equipment of the machine shop, which will include a general line of tools for repair work.

The A. H. Reid Dairy & Creamery Supply Company has purchased a tract of 57 acres, located at Holmes Station on the Baltimore & Ohio Railroad, a short distance from this city, and is having plans prepared for the erection of buildings for the manufacture of dairy and creamery supplies, separators, &c. Just what additional equipment will be required at the new plant has not been decided. Most of the machinery, however, will be transferred from the company's present plant at Thirtieth and Market streets, when the new one is completed.

The awards for the building of a number of bridges for the city of Philadelphia, of which mention was made in our report some weeks ago, have been announced by the Director of Public Works, as follows: Mt. Pleasant avenue, over the Chestnut Hill branch of the Reading Railway, to Richard Walsh, for \$33,000, one-half of cost to be paid by the railroad; Gorgas street, over the tracks of the same road, to Richard Walsh, one-half of cost to be borne by the railroad; Phil-Elena street, over the same tracks as the above, to Richard Walsh, for \$33,000, to be paid by the city; Fifty-eighth street, over the tracks of the West Chester branch of the Pennsylvania Railroad, to the Filbert Paving & Construction Company, the railroad to pay one-half the cost; Cresson street, over Midvale avenue, to Read & Riddle, for \$20,000.

The Eynon-Evans Mfg. Company is having plans prepared by George W. Hewitt & Co., architects and engineers, for a number of improvements to its plant, work on which it is expected will not be started until next spring. The new additions will be largely devoted to machine shop purposes, and with the recently completed addition to the foundry will increase the capacity of the plant threefold. The company will be in the market for quite a quantity of machine tools for the equipment of the new addition, but this matter will not be taken up for some time. Business conditions with the Eynon-Evans Mfg. Company have been extremely good. The demand for blowers is extensive, and one order for 66 was recently booked, while orders for smaller numbers have been received from a number of steel plants and other concerns.

The Baldwin Locomotive Works booked orders last week for nearly 400 locomotives, among which were included 285 for the Harriman lines, comprising 208 consolidation freight, 53 switching and 24 passenger engines. An order for 40 freight engines for the Isthmian Canal Commission and one for 25 freight engines for the Louisville & Nashville Railroad were also among last week's orders. The Baldwin Works has now abandoned its iron foundry at the local shops and will use the space occupied by it for an addition to its erecting shop. The new Eddystone plant is now producing about 60 tons of gray iron castings daily, and this tonnage will be increased as fast as the additions to the plant now under way are completed. Four large new cupolas have been installed, and other facilities to enable a large output to be made will be added. It has been rumored that a steel casting plant was also to be erected at Eddystone by the Baldwin Locomotive Works, but this report we are requested to officially deny, there being no intention on its part to engage in that branch of the business. The work on the three smith shops is temporarily held up, owing to nondelivery of structural material.

The Royersford Foundry & Machine Company, Royersford, Pa., has more business on its books than ever before. Its machine shop is running 13 hours per day, and from present indications will have to continue overtime work for a long while. There has been a material increase in the demand for punches and shears, and a large number of orders have been booked during the last six weeks. Several of these machines have been shipped to the Donaldson Iron Works, Emaus, Pa., several to Curtis Bay, Md., and a number are in course of construction for parties in New York City and vicinity. In the foundry the company is also very busy, and the outlook for business during the fall months is considered highly satisfactory.

The Newton Machine Tool Works, Incorporated, reports the month of August the best individual month in point of orders that it has had for some time, business equal to twice the shipping capacity having been booked. The demand covered all sizes of the combination type of cold saw cutting off machines, bar and steel foundry saws, several large sized crank shaft saws and special railroad saws. Portable tools have been taken for export shipment, particularly for France, while orders for key seat milling machines, slab milling machines, cold saws and boring machines have been taken for export to England, Germany, France and Canada. A number of domestic orders for the new design of radial drilling and tapping machines are also to be noted. Deliveries by the Newton company recently have been very heavy, and include shipments of various tools to the Pennsylvania Railroad shops, the St. Louis & San Francisco Railroad shops, the Baldwin and the American locomotive works and to several large bridge and electric companies. A large key seat milling machine was exported to Germany, while cold saw cutting off machinery was exported to Canada.

A boulder 17 x 12 x 7 ft., weighing 60 tons, has been dislodged from the bed of the Nile by the powerful current issuing from the barrier at the Assouan dam and hurled against the masonry. The tremendous force of rapidly moving water is not generally recognized. It is estimated that the weight of solids which can be moved by a stream increases as the sixth power of the velocity; thus, a stream moving at 10 miles per hour can move 64 times the mass which can be moved by a stream at 5 miles per hour.

## New England Machinery Market.

WORCESTER, MASS., September 11, 1906.

The feature of the market the past week has been the advance of 5 per cent. on certain lines of planers. The increase is not general in the sense of applying to all sizes, nor have all the builders of this type of tool taken action in the matter. Certain of the manufacturers have raised the price of 24-in. planers 5 per cent., and several of them have made a similar advance in other sizes. The 24-in. planer has formed a weak spot in the lists of all manufacturers, the price not having equaled those of other sizes in affording the same profit earned. Recent advances on planers have not affected the 24-in. size any more than the others. The increase in the cost of manufacture is also responsible for the advance. Castings have gone up materially since the present condition of business began, one manufacturer figuring his increase at 20 per cent., which forms a very large item in such heavy machines as planers, and wages have gone up materially, so that another advance along the whole line of planers would not be considered by the manufacturers to be unwarranted.

President E. M. Woodward, Worcester, president of the National Machine Tool Builders' Association, has telegraphed Secretary P. E. Montanus, Springfield, Ohio, requesting him to call the annual meeting of the association for Tuesday and Wednesday, October 16 and 17, at New York, the place not having been determined upon. This is undoubtedly equivalent to fixing the date for those two days. Some members had preferred a week earlier, in order that discussions which should be of great value to members might not be delayed any longer than necessary, but other members urged the last of the month, so a compromise date was selected.

The machine tool market was never so little disturbed as to-day by the entrance into the field of manufacturers who produce tools on a very small scale and at low cost, enabling them to sell below the large dealers and still make a profit. Naturally such small tool builders would not be noticed at this time, when business is so exceedingly good, excepting that the establishment of any material number of such concerns would tend to play the mischief with the market later on. Most of these small manufacturers produce engine and speed lathes, generally the former. They are graduates of the works of the larger manufacturers, and have only enough capital to purchase a simple shop equipment. Their overhead costs are very small and they put their own labor into their machines, so that their wages alone would give them a living profit if they sell at what would be called actual cost in a larger works. Formerly each period of prosperity developed a considerable number of small manufacturers of this type, and when business slackened they had a powerful influence, in the aggregate, in fixing the prices for plain engine lathes. As a rule they do not go beyond the simplest types of machines. Occasionally they take up the manufacture of other lines of machine tools. Another annoyance of the machine tool trade of a decade or generation ago was the manufacturer who went into the business with little regard for costs, getting business at all hazards, and afterward failing, creditors losing what customers had received in low prices. Such an instance occurred some years ago when a company started the building of metal planers on a considerable scale, selling very low, much lower than competitors could afford to dispose of their tools. No one could make out how such prices could be made, until the company failed for a large amount of money. The market then returned to a normal condition. To-day neither of these machine tool market influences have appeared as a result of great prosperity to threaten the trade when business will have to be hunted.

An idea of how wages have advanced with the builders of machine tools can be obtained from the experience of one company, employing about 200 men and manufacturing heavy machinery which does very exact work. A careful compilation of wages made from the books of the company a year ago and to-day shows that the average wage has increased from about 19 cents to about 21 cents an hour. Figured in percentages, the increase in average wages is 10½ per cent. This is probably a pretty good average, taking the machine tool establishments of the country as a whole. Where the work is light, but requiring most careful work, probably the percentage of labor cost increase is still higher, and where less skillful labor is used perhaps the percentage of increase would run a little under 10 per cent., though it is doubtful if this is the case. It is believed that the average wage in this particular shop will advance to 22 cents within a few months. Those outside of the business can have no realization of the difficulty that obtains in procuring skilled or even partially skilled workmen. Only the other day a planer hand, in reality a second-rate man, was hired at \$3.50 a day, not because he was worth it, but because he would work for no less, knowing that he could get it elsewhere. In ordi-



nary times a first-class planer hand can be procured for less money. So it is in all branches of the machinists' trade. As for the high class, all around machinist, he has become almost an unknown factor in the labor market, so carefully is he guarded by his employers.

The shortage of freight cars is being felt by machine tool builders of New England, especially by manufacturers of large machines which require box cars and which are so large that it is necessary to load from end doors, the ordinary side door not being wide enough to take the machines. The new type of cars designed for the transportation of automobiles, with very wide side doors, is looked upon as offering a solution of a vexed problem of machine transportation, because they will admit the loading of tools which the ordinary car will not.

The Boston dealers have been cheered by the announcement received in various forms from New Haven that the New York, New Haven & Hartford Railroad is to distribute its business in placing contracts for the machine tool equipment of the new locomotive repair shops at Readville, Mass. Already several of the dealers have been informally notified that certain of their bids have been accepted by the railroad company, the amounts aggregating fairly large figures in several instances. The dealers have put in a vast deal of work on this list of tools, and there would have been grievous disappointment had the entire list been given to a single dealer, as had been feared. Indications are that the distribution of the machinery contracts will be pretty general.

The General Electric Company states that it is not planning to build an iron foundry in connection with its scheme of enlargement of the works at Lynn, Mass.

Fay & Scott, Dexter, Maine, manufacturers of machine tools, are building a large one-story addition to their erecting shop, which will double the capacity of that department.

Stoddard, Haserick, Richards & Co., 152 Congress street, Boston, textile machinery, have taken the building at Worcester, Mass., formerly occupied by the National Emery Wheel Company, and will remove their machine shop there from Boston. The shop will be called upon for light work only and no new machinery will be required at present.

The Andrew Terry Company, Terryville, Conn., manufacturer of malleable iron castings, is building an addition to its foundry, 30 x 50 ft., and will install a new air furnace.

The Bennett Bros. Company has been organized under Massachusetts laws, with a capital stock of \$10,000, as a branch of the corporation of the same name of Lowell, Mass., to handle the latter's business in Florida. The company will have its headquarters in Jacksonville, Fla., with Lee Madden as manager, and will act as sales agent for the Challenge Company, Batavia, Ill.; Stover Engine Works, Freeport, Ill.; Kelley Foundry & Machine Company, Goshen, Ind.; American Machine Company, Newark, Del., and some of the large pump manufacturers, though it is not decided what line of pumps will be taken up. Nothing will be manufactured at Jacksonville, for the present at least, neither will any retail business be done, it being intended to sell only to the dealers of Florida and the southern parts of Georgia and Alabama. The officers of the company are: President, Edwin Bennett, Lowell; treasurer, Lee Madden, Jacksonville, and clerk, George E. Bennett, Lowell. The Bennett Bros. Company handles windmills and towers, tanks and tank towers, pumps and gasoline engines.

The new factory of F. P. Pfelegher & Son, New Haven, Conn., manufacturers of hardware and special machinery, will be larger than was at first planned. The main building will be 60 x 260 ft. and four stories, of reinforced concrete, and there will also be a one-story building, 40 x 200 ft., which will be devoted to casting room, forge shop, annealing room and engine room. The list of machine and other requirements is not yet ready.

The Waltham Watch Company, Waltham, Mass., is planning the erection of a five-story building, adjoining the rear of its factory and extending 200 ft. to the Charles River. This is in addition to the buildings now under construction, which have already been mentioned in this column. The proposed building will be used for manufacturing purposes.

The D. F. Briggs Company, Attleboro, Mass., manufacturer of jewelry, is to erect a three-story concrete building, 40 x 167 ft., to be devoted to manufacturing.

The Bullard Machine Tool Company, Bridgeport, Conn., builder of boring mills, is to build an addition to its works, of brick and steel, 35 x 100 ft. and two stories. The building will be used for storing finished parts, relieving existing space for other purposes.

The Birmingham Iron Foundry, Derby, Conn., manufacturer of chilled and sand rolls, machinery and castings, is to erect a one-story building, 70 x 105 ft., which will be an addition to the present foundry buildings. It will serve practically for a new roll foundry, as it is intended to move that department from the main foundry to make more room for other work. The company is putting in a 10-ton air furnace, another cupola, power cranes and other equipment.

The Bristol Mfg. Company, Bristol, Conn., is to build an addition to its factory at Plainville, to be 22 x 140 ft. and three stories.

The Stockbridge Machine Company, Worcester, Mass.,

manufacturer of shapers, has been installing a considerable amount of new machinery, which will increase its capacity about 25 per cent. The building which the company occupies is now filled to its maximum capacity, so that when other improvements are made in the future an addition to the works will undoubtedly be necessary. The increasing business has necessitated this extension of productive capacity.

The Prentice Bros. Company, Worcester, Mass., builder of engine lathes and drills, is installing a 150-hp. engine, built by the Brown Engine Company, Fitchburg, Mass., and a generator to furnish power which will be sold to the Crompton-Thayer Loom Works. This means that the Prentice Bros. Company will remain as lessee of the buildings which it now occupies.

The Pawtucket Mfg. Company, Pawtucket, R. I., manufacturer of machinery, bolts and nuts, is to extend its machine shop building and will equip the addition with a heavy traveler for greater facility in handling castings.

The Harvey Hubbell Company, Bridgeport, Conn., manufacturer of machine tools and electrical specialties, is having plans prepared for a new buildings, 50 x 100 ft. and three stories. It is not, however, definitely decided that the work of construction will begin this fall.

## Government Purchases.

WASHINGTON, D. C., September 11, 1906.

The following bids were opened September 4 for supplies for the navy yards:

Bidder 8, George F. Blake Mfg. Company, New York; 13, F. S. Banks & Co., New York; 19, Baker & Hamilton, San Francisco, Cal.; 20, A. S. Cameron Steam Pump Works, New York; 21, Chicago Pneumatic Tool Company, New York; 26, Chandler & Farquhar Company, Boston, Mass.; 33, Dunham, Carrigan & Hayden Company, San Francisco, Cal.; 34, M. T. Davidson, Brooklyn, N. Y.; 37, Eccles & Smith, San Francisco, Cal.; 49, Gamwell & Wheeler, Seattle, Wash.; 53, Henshaw-Buckley Company, San Francisco, Cal.; 58, Hisey-Wolf Machine Company, Cincinnati, Ohio; 60, Hanlan-Buck Mfg. Company, St. Louis, Mo.; 102, Quincy-Manchester-Sargent Company, Plainfield, N. J.; 108, John B. Roache, Brooklyn, N. Y.; 113, Sherman-Brown-Clements Company, New York; 139, Warren Steam Pump Company, New York.

Class 11. Two hydraulic jacks—Bidder 19, \$104; 33, \$92.08; 49, \$88.80; 60, \$83; 108, \$81.56; 113, \$96.

Class 24. Two jaw pneumatic riveters—Bidder 21, \$1150; 37, \$1150; 53, \$1250; 102, \$1125.

Class 132. One portable electric grinder—Bidder 26, \$96; 58, \$96; 108, \$96.

Class 133. One simplex double acting distiller circulating pump—Bidder 8, \$745; 13, \$219.75; 20, \$970; 34, \$990; 19, \$642.50.

The following bids were opened August 30, Circular No. 324, for pneumatic tools for the Isthmian Canal Commission:

Bidder 21, Chicago Pneumatic Tool Company, New York; 24, Cleveland Tool Company, Cleveland, Ohio; 51, Independent Pneumatic Tool Company, Chicago, Ill.; Ingersoll-Rand Company, New York.

Class 1. Twenty long stroke riveting hammers, with repair parts—Bidder 21, \$1333.43, 30 to 60 days; 24, \$1442.80, 20 days, except 7, 8; 51, \$1524.43, 3 to 15 days, except 8 to 10; 117, \$1513.67 and \$1507.18, 4 to 21 days.

Class 2. Six holder-ons, with repair parts—Bidder 21, \$190.68, 30 to 60 days; 24, \$158.15, 21 days.

Class 3. Six breast drills, with repair parts—Bidder 21, \$311.50, 30 to 60 days; 24, \$267.49, 21 days; 51, \$372.24, 3 to 15 days; 117, \$323.38, 4 to 21 days.

Class 4. Twenty-four chipping and calking hammers, with repair parts—Bidder 21, \$1224.76, 30 to 60 days; 24, \$1304.90, 21 days; 51, \$1349.59, no time; 117, \$1454.61 and \$1459.30, 4 to 21 days.

Class 5. Three Little Giant reversible drills, with repair parts—Bidder 21, \$420.31, 30 to 60 days; 24, \$358.46, 30 days; 51, \$392.36, 3 to 15 days; 117, \$315.28 and \$410.30, 4 to 21 days.

Class 6. Thirty-six Little Giant nonreversing drills, with repair parts—Bidder 21, \$2790.60, 30 to 60 days; 24, \$3053.19, 30 to 45 days; 51, \$2967.82, 3 to 15 days; 117, \$2527.10 and \$3457.49, 4 to 21 days.

Class 7. Ten angle gears, with repair parts—Bidder 21, \$394.59, 30 to 60 days.

Class 8. Twelve wood boring machines, Little Giant, with repair parts—Bidder 21, \$943.17, 30 to 60 days; 24, \$1062.92, 30 to 45 days; 51, \$1048.01, 3 to 15 days; 117, \$1029.96, 4 to 21 days.

The following bids were opened September 1 for two air compressors and accessories for the Charleston Navy Yard:

Ingersoll-Rand Company, New York, item 1, \$25,500 and \$18,924; 2, \$25,500 and \$18,924; 3, \$21,479 and \$15,530; 4, \$21,479 and \$15,530.

Laidlaw-Dunn-Gordon Company, New York, item 1, \$20,850 and \$22,050; 2, \$20,850 and \$22,050; 3, \$17,282 and \$18,382; 4, \$17,482 and \$18,582.

## Trade Publications.

**Machine Tools.**—Burke Machinery Company, Cleveland, Ohio. Circular. Pertains to the Nos. 1, 1½ and 2 tapping machines made by this company, and also the Nos. 2 and 4 milling machines; No. 0 10-in. sensitive drill press; the No. 2 tapper column, and the No. 1 10-in. sensitive drill press. Specifications and illustrations are given of all of these tools.

**Compressors and Pneumatic Tools.**—Ingersoll-Rand Company, 11 Broadway, New York. Two catalogues and a bulletin. Catalogue D43, size 6 x 9 in.; pages 54, is on the subject of "Rand Rock Drills and Mountings for Mines, Quarries and Tunnels." The drills are operated by steam or compressed air, and their construction and operation are clearly brought out in this book. Numerous illustrations show different mountings and various ways of using them. Catalogue X136, same size, with 28 pages, deals with the Imperial type 11 power driven air compressors, with vertical duplex air cylinders for belt or motor drive, designed for pressures of 15 to 25 lb., and from 60 to 100 lb. The capacities per minute vary from 88 to 503 and 16.6 to 321 cu. ft. per minute, respectively. The 11-2 type differs in having compound instead of duplex single acting air cylinders. It is designed for air pressures of 80 to 100 lb., the capacities ranging from 71 to 251 cu. ft. per minute. The same catalogue shows an Imperial type 11 junior air compressor made with only one cylinder and with air or water jacket cooling. Bulletin No. 2007 is devoted to Imperial piston drills, Nos. 1, 2, 3, 4, 11, 12, 13, 20 and 21, illustrations of all of which are accompanied with brief descriptions. Illustrations which follow show the use of the drill.

**Gas and Gasoline Engines.**—New Era Gas Engine Company, Second and Dale avenues, Dayton, Ohio. Catalogue and pamphlet. The catalogue is 6¼ x 9 in., and contains 40 pages. Devoted to illustrations and descriptions of the New Era gas engine and its special features. It is a horizontal four-cycle single cylinder hit and miss self-scavenging gas engine and has been on the market for over 12 years. It is adapted to use as fuel either natural or artificial gas, producer gas, acme gas, gasoline, kerosene or distillate, and can be changed from one fuel to the other without stopping the engine. It is regularly made in sizes up to 125 hp. The company also builds two-cylinder vertical gas engines and a 2-hp. vertical and a 4-hp. horizontal single cylinder gas engine using the same fuels. The pamphlet is a smaller, abridged edition of the catalogue with the addition of information concerning portable gasoline engine equipments.

**Engines and Boilers.**—Liddell Company, Charlotte, N. C. Catalogue. Size 6¼ x 10½ in.; pages 28. The types of engine shown in this catalogue include the Liddell-Tompkins, made in seven sizes; the Liddell-Chambers, a new design, heavy duty, horizontal engine, and the Liddell high speed automatic engine, made in nine sizes. The boilers shown include the improved New Era boiler, a horizontal tubular type, and a horizontal return tubular stationary boiler. Smoke connections are made for these boilers, and a vertical tubular boiler is also described. The second catalogue from the same company deals with improved cotton gin machinery.

**Pneumatic Water Supply.**—Kewanee Water Supply Company, Kewanee, Ill. Catalogue. Contains an illustrated exposition of the principles of the Kewanee system for supplying water to public buildings and country residences, &c., unserved by city systems. It differs from the elevated tank gravity method of water supply, in that compressed air takes the place of the attraction of gravity to force the water to the points of consumption, and the tank is located in the basement of the building rather than in the attic or out of doors. This has the advantage of keeping the water cool in summer and warm in winter, or at nearly a uniform temperature the year round, and places the weight of the tank on solid ground, where the occurrence of a leak would not be serious. Hand or power pumps are used for filling the tank, and appliances are provided for replacing the air that is lost through absorption by the water. The most important feature of the system is a positively air tight tank.

**Crucibles.**—Waterbury Crucible Company, Waterbury, Conn. Pamphlet. Presents a line of crucibles made from Ceylon plumbage and German clay, for which a specially long life is claimed. Tables of the sizes and shapes of the crucibles made are included.

The two ends of the north tube of the Pennsylvania tunnel under the North River, which is being constructed by the O'Rourke Engineering Construction Company, were joined Monday, a year in advance of the time specified in the contract. The first car, one of the construction cars, was run through the tube Wednesday, carrying President Cassatt of the Pennsylvania Railroad, John F. O'Rourke, the builder, Chief Engineer Jacobs and other officials. The completion of the tube in such a short space of time is believed to be one of the greatest feats in modern engineering.

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# HARDWARE

THE removal of the tax on denatured alcohol will undoubtedly open up new fields of industry not only for the manufacture of distilling apparatus for producing the spirit on a larger or smaller scale, but also for the manufacture of appliances and utensils connected with its use as a source of illumination and power. There will, of course, be a large demand for apparatus for manufacturing alcohol on an extensive scale, but there should be a call also for as small distilling plants as will be permitted by the Government regulations, for use possibly in farming communities and for the extracting of alcohol from the by-products of small industries. There is now a good deal of interest taken in the question as to what will be permitted in this direction, as it will unquestionably be deemed necessary for the Government to throw careful restraints about production of the denatured alcohol, so as to secure the revenue to which the Government is entitled. There appears to be in some directions a misapprehension in regard to this matter, as farmers, for example, are contemplating with satisfaction the day when they will be independent of merchants for the fuel with which to run their engines and the illuminant with which their houses are to be lighted, since they will raise their own alcohol, so to speak, as by distilling apparatus they procure it from their own products. It is not, however, at all probable that this will be feasible, inasmuch as the Government will establish rules which will require the manufacture of the alcohol for such purposes on so large a scale as to put it beyond the reach of such individual consumers.

It is, however, not unlikely that among the developments of the near future will be the establishment of sources of local supply which will give villages and farming communities opportunities to have light and power on exceedingly advantageous terms. It is indeed not too much to expect that rural neighborhoods will be able to furnish the alcohol necessary for operating their power plants, just as they are independent in the matter of other farming products. Already manufacturers of this class of apparatus are devoting much thought to the subject, but before much can be definitely accomplished it will be necessary to know what regulations will be established by the authorities at Washington. An early decision and announcement on this point will do much to clarify the situation and to inaugurate the active development of a practically new industry.

With cheap alcohol, especially of local production, farmers in a country sparsely wooded might very well make themselves independent in their entire fuel supply by burning alcohol in their furnaces, stoves and ranges. But while a great vista of usefulness is open to the farming world, this blessing is obviously not confined to the uses of the residents of rural neighborhoods. American manufacturers are always quick to seize upon a new market and to furnish and develop any demand that may be made on them, and the thought of cheap alcohol for power and fuel, as well as for many uses in the industrial arts, seems to suggest almost unlimited possibilities of usefulness. There is something almost Utopian in the thought of a farming community producing its own fuel from the ground, utilizing waste products and converting what the markets will not accept at a profit into fuel and illuminant, which can be sold if it cannot be consumed at home. This is a matter in which

the Hardware trade is especially interested, as its merchants will be closely affiliated with the new uses of alcohol and will carry appliances and apparatus, as well as engines and practically everything which the public in town and country will need in order to avail themselves of the facilities and profits which will be afforded them, if the anticipations of the advocates of the encouragement of denatured alcohol are in any measure realized.

## Condition of Trade.

The fall business is now fairly under way with so liberal a movement as to keep manufacturers and jobbers fully occupied. Indeed, the manufacturers find themselves confronted with a volume of business which overtaxes their capacity, and most of those who are making staple goods which have a recognized place in the market are seriously behind their orders. While they have the satisfaction of well laden order books, they are obliged to suffer the inconvenience and annoyance which result from their inability to make shipments as promptly as demanded by their customers, whose clamor for goods and complaints—perhaps in many cases unreasonable complaints—increase not a little the friction and labor of transacting business. Difficulties in the factories, too, especially in the shortage of material, have to be reckoned with. Another side of this condition of things is found in the distributing trade. Most of the retail merchants of any foresight are fairly well provided with goods, though some of them find the slowness of shipment on the part of manufacturers affecting them. The growing probability of a scarcity of many kinds of goods before the season is over is, however, stimulating their purchases, and the jobbers are generally very busy, finding indeed a larger volume of business than is usual at this early stage of the season. The problem of obtaining goods is thus brought home forcibly to the wholesale houses. Under these conditions the market is naturally decidedly firm, as the character of the current demand adds to the influence of the strength in the raw material and the difficulty of obtaining it. Higher prices are consequently gradually developing, and especially in heavy goods, on some kinds of which further recent advances are announced. In the existing state of things it is obvious that merchants as well as manufacturers are given an incentive to the carrying on of their business on liberal lines with enterprise and energy. Conditions are such that exceptionally favorable opportunities would seem to be put within the reach of those who are in a position to improve them.

### Chicago.

That the Western Hardware trade during the fall months will reach an unprecedented volume is indicated by the avalanche of orders that have been received by large jobbers and distributors during the past week. The totals already exceed those of the same period last year by a large percentage, and the months of September, October and November thus early give promise of breaking all records in the history of the Hardware trade. Delayed shipments of staple goods, which have kept jobbers' stocks at a low ebb throughout the year, have resulted in the placing of specifications with manufacturers covering requirements four or five months in the future. Owing to the uncertainties of market developments jobbers generally are averse to anticipating their wants so far ahead, especially on lines that are affected by raw material

fluctuations, but their experiences during the past eight months make this step a necessity under prevailing conditions. Retailers are also anticipating their wants more generally than heretofore and are requesting goods sent forward that will not be set on floor for several months. The scarcity of Rivets, Nuts, Bolts and kindred lines of iron and steel goods is acute, and as warehouse stocks are very low consumers' demands are entirely dependent upon daily mill shipments. Rivets have again moved upward 5 per cent., making the third advance of the year. Manufacturers of Wagon Chains are likewise unable to cope with the heavy demand, while deliveries of Horse Shoes are deferred from four to six weeks. On Wire products the mills are doing their utmost to fill orders and up to the present are succeeding admirably. Carload shipments of assorted goods direct from the mills to the retailer are going forward in from two to three weeks, and jobbers' specifications are being rapidly filled. Reports from the West and Northwest point to a corn crop somewhat larger than was harvested last year, and Corn Knives, Huskers and other corn harvesting implements are going forward from jobbers' stocks in large volume. A local jobber in Heavy Hardware has just opened what is said to be the largest wagon woodstock lumber yard in the country. A large stock of hardwood lumber will be constantly carried, and the sale of 75,000 Wagon Poles last week to one consumer for extended delivery is indicative of the extent of this trade. Seventy-five cars will be required to ship this material.

### NOTES ON PRICES.

**Wire Nails.**—The market for Wire Nails is characterized by a continuance of the heavy demand, now running considerably in excess of possible production. Reserve stocks are practically exhausted, and the largest manufacturers are said to be shipping goods direct from their machines and endeavoring to help out clamoring customers with pro rata deliveries. Comparing the present tonnage with that of a year ago, it is stated that requirements have shown an increase of 25 per cent., about evenly distributed over all sections of the country. In spite of these conditions there is reason to believe that jobbers are not buying quite as heavily as a short time ago. Some independent manufacturers, being offered more business than they can handle, are holding their product a little above the market. Quotations remain as follows f.o.b. Pittsburg, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers .....	\$1.85
Carload lots to retail merchants.....	1.90

**New York.**—Wire Nails continue firm in the local market, a strengthening tendency being shown in the strict maintenance of the price on single carloads, as against larger orders. In volume of business July and August totals showed a comfortable increase over the corresponding months of last year, while an even better showing is promised for September. Stocks on hand are light and growing inconvenience is occasioned by delayed deliveries from the mills, which are said to be running constantly farther behind their orders. Quotations on small lots remain on a basis of \$2.10 per keg.

**Chicago.**—The new tonnage thus far received by the mills this month almost equals the bookings during the same period in August, and while the manufacturers are now making fairly prompt deliveries, the indications are that they will be greatly delayed during the fall months, as the average daily specifications are from 40 to 50 per cent. in excess of the output. The car shortage interferes with the movement of not only the finished material but the raw product as well, and no improvement in the situation has been noted during the week. Stocks in the hands of manufacturers are exceedingly low and it is probable that they will be entirely depleted when the fall movement is at its height. While concessions of \$1 a ton are still reported, they are made only by the smaller mills on extremely desirable business, the larger producers having absolutely with-

drawn all special prices, regardless of the tonnage. Quotations are firm but unchanged, as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—In addition to a shortage in supply of steel, which has curtailed output of Wire Nails for some time, the mills are now confronted with a car shortage. Indications are that by the last of this month or early in October there will not be enough Wire Nails to meet the demand, as the mills are very heavily booked up and new tonnage is coming in very freely. Fall trade promises to be much heavier than last year. Prices are firm, but occasionally some of the smaller mills make concessions over official prices of about 5 cents per keg. We quote: Wire Nails, \$1.85 in carloads to the large jobbing trade and \$1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

**Cut Nails.**—There has been a material increase in demand for Cut Nails, and it may safely be asserted that the present volume of business would be considerably larger if it were not limited by the available supply. Prices have evidenced a decided tendency to cut loose from their usual domination by the Wire Nail market. Manufacturers show little or no disposition to cultivate business, although they are of course making an effort to serve their large, regular customers. One important plant still remains practically shut down, as regards production in this direction. Concessions, formerly quoted on official prices, have been generally withdrawn, and indeed Eastern mills are said to be getting at least 5 cents per keg above Pittsburgh quotations. Conditions are reflected in a material strengthening of export prices, orders being recently taken at an advance of 10 to 15 cents per keg. Official quotations remain as follows: \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh; \$1.95 for carload lots, on dock, New York; \$2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 and 10 cents advance on Steel Cut Nails.

**New York.**—The past week has witnessed a change in the local situation, due to a heavy and somewhat sudden increase in demand. Large inroads have been made upon the stocks of jobbers, who are now practically unable to fill orders, on account of delayed deliveries from manufacturers. Contracts made in the spring and early summer are about all expired, and great difficulty is experienced in placing orders for prompt shipment. There is an urgent inquiry for spot Nails, jobbers seeking accommodation from each other to cover their immediate requirements. Stocks are uniformly depleted and broken, however, and, as a matter of fact, there are few Nails to be had. Small lots are still quoted at a base price of \$2 per keg.

**Chicago.**—Specifications on contract orders are increasing, and local distributors of Cut Nails are expecting a much larger movement for fall delivery than that of last month. Quotations prevail as follows: Steel Cut Nails, in car lots, \$1.90 to \$1.95; less than car lots, \$2; Iron Cut Nails, \$2 to \$2.05, in car lots; less than car lots, \$2.10.

**Pittsburgh.**—Some fair-sized contracts for Cut Nails are being made for fall delivery, and specifications on old orders are coming in freely. The mills continue to report a shortage in supply of Steel, and a car shortage is also looming up, which may seriously retard shipments. We quote Cut Nails at \$1.75, base, f.o.b. Pittsburgh, for carload lots, and \$1.80 in less than carload lots. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

**Barb Wire.**—While little business is being booked at this season of the year, a heavy production is reported, although some mills are handicapped by difficulty in securing the required raw material. The fall movement of Wire promises to be large, and consignees will urge early shipments in anticipation of the car famine, which is generally feared. Prices remain practically unchanged in the small orders now being offered, quotations being as



follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots .....	\$2.00	\$2.30
Retailers, carload lots .....	2.05	2.35
Retailers, less than carload lots .....	2.15	2.45

**Chicago.**—Large Western distributors are specifying freely on contracts placed last month, and the fall movement promises to exceed all records established during spring periods, when the Barb Wire trade is usually at its height. Slight concessions in prices continue to be reported, notwithstanding the pressure for early deliveries, but the shading of prices is limited almost entirely to a few small independent finishing mills. The following quotations prevail: To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45. To retailers, car lots, Painted, \$2.20; Galvanized, \$2.50; retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60; Staples, Bright, in car lots to jobbers, \$2.10; Galvanized, \$2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Specifications on contracts are coming in very freely and shipments by the mills this and next month promise to be very large. The shortage in supply of steel is still being felt by the mills and prevents them from making maximum output. Prices are firm, but some of the smaller mills occasionally shade official figures about \$1 a ton. We quote: Painted Barb Wire, \$2, and Galvanized, \$2.30, in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

**Smooth Fence Wire.**—Producers of Smooth Wire report that the demand from the manufacturing trade is the heaviest ever known, and the tonnage already booked will necessitate running mills to full capacity for several months. The most notable feature of the market is the enormous demand for material from manufacturers of Woven Wire Fence, whose production and sales for next season will far exceed all previous records. Rush deliveries are being urgently called for, and mills are said to be four to six weeks behind. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....	\$1.70
Retailers, carloads .....	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

**Chicago.**—Owing to the heavy demands of the manufacturing trade, deliveries are deferred from four to six weeks, and as specifications continue to exceed production, shipments are constantly falling further behind. The requirements of field fence manufacturers are enormous, sales of Woven Wire Fencing having been exceptional for the fall trade. The stock made up by the leading interests during the summer months, although the largest on record, has almost been depleted, and other makers report a proportionate movement. The demands of the manufacturing trade for Mattress, Spring and special grades are also abnormal and prices are firmly maintained on the following basis: Jobbers, \$1.85, f.o.b. Chicago, in car lots; retailers, \$1.90.

**Pittsburgh.**—Specifications on contracts are heavy and, with the supply of Steel still short, the mills are already from four to six weeks behind in deliveries and will probably get further behind as the season advances. New tonnage coming in is quite heavy, and indications are that the mills making Fence Wire will run to full capacity for the rest of this year at least. Prices are firm, but are sometimes shaded about \$1 a ton by some of the independent mills. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads .....	\$1.70
Retailers, carloads .....	1.75

The above prices are for base numbers, 6 to 9.

**Bolts and Nuts.**—As previously stated in these col-

umns, the demand for Bolts and Nuts has long been in record breaking volume, although prices have been held steady by the conservative action of the interests in control of the market. Manufacturers, however, are falling further and further behind in their orders, and jobbers in all sections are complaining loudly of their inability to secure deliveries. Nuts are especially hard to get, and stocks are low and badly broken. It is generally believed that market conditions cannot much longer fail to be reflected in the prices of these commodities.

**Brass Goods.**—A meeting of the National Association of Brass manufacturers was held in Niagara Falls, N. Y., on Wednesday, 5th inst., with a large and representative attendance, including manufacturers from the East and as far West as San Francisco. Among other matters discussed it was decided to revise some lists, the changes to go into effect January 1, 1907. Those who are interested in obtaining early copies of these revised lists may do so by communicating with William M. Webster, 100 Randolph street, Chicago. Merchants who are intending to issue new catalogues will doubtless be especially interested in having early information in regard to the changes which are contemplated in the lists in question. The meeting of the manufacturers adjourned for the annual meeting in New York, December 11 and 12.

**Crayons and Chalk.**—There is, as we have before pointed out, some irregularity in the market for Chalk and Crayons, owing almost exclusively to the cutting of prices by the jobbers who have stocks on hand purchased at the low figures which were current before the advances made two or three months ago by the manufacturers. As the result of this cutting retail merchants are able to purchase the goods from the wholesale houses at less than the price to the jobbers at the present time. There are indications, however, that this condition is gradually correcting itself, as jobbers' old stocks are becoming depleted, or from a disposition on the part of the jobbers to pursue a more conservative policy and realize the profit of these goods which the present situation puts within their reach. The following are the regularly established prices of the manufacturers to the retail trade, which are still to some extent nominal, as maintained by but few jobbers:

#### Carpenters' Chalk.

White, per gross .....	\$0.45
Red, per gross .....	.50
Blue, per gross .....	.55

#### White Round Chalk Crayons.

Sandusky brand, per case of 100 gross .....	\$8.00
Waltham brand, per case of 100 gross .....	8.00
Empire brand, per case of 100 gross .....	7.50
Sterling brand, per case of 100 gross .....	7.50

#### White Crayons, Enameled, Yellow, Pink or Purple.

Sterling brand, per case of 100 gross .....	\$8.00
Sandusky brand, per case of 100 gross .....	9.00
Waltham brand, per case of 100 gross .....	9.00

#### Hexagon Chalk Crayons.

White, per case of 100 gross .....	\$9.00
Enameled, per case of 100 gross .....	10.00

#### Penny a Box Chalk Crayons.

No. 16, per gross .....	\$0.75
No. 17, per gross .....	.80
No. 18, per gross .....	.85

**Asbestos.**—The irregularities in the price of Asbestos materials, such as mill board and paper, following the dissolution of the price agreement last spring among a large proportion of such manufacturers, still continues. Some of the larger interests adhere in the main quite closely to the former agreed prices, while other important makers take orders at marked reductions if compelled to. As manufacturers are rather well sold up on these lines and also, as the supply of fiber or raw material is scarcer, the tendency is toward a hardening in price rather than weakness. An average price for mill board 1/16 in. or thicker is 5 cents per pound, with concessions in some instances for large orders of a cent or more per pound. Asbestos Packing, Wick and Rope, still continues at 17 cents to 22 cents per pound, the lower price being for 500 pounds or over.

**Sash Cord.**—The market for Cotton Sash Cord is receiving considerable attention from well posted buyers and it is said that there is some uncertainty as to the im-

mediate course of prices. Developments of the next week or two are awaited with interest.

**Steel Goods.**—New prices on Steel Goods for the coming season have been issued by American Fork & Hoe Company, and are now in the hands of the jobbing trade. Changes in last year's schedule are few and unimportant.

**Copper Rivets and Burrs, Soldering Coppers, Etc.**—The market for Copper Rivets and Burrs, Soldering Coppers, Jack and Safety Chain and other lines in which Copper is a large element of production shows special firmness in sympathy with the strength of Copper metal. As yet, however, there has been no quotable advance in prices.

**Window Glass.**—A meeting of the Eastern jobbers was held in Pittsburgh, on Friday, 7th inst. Among other matters discussed at the meeting was the resumption of work by the manufacturers. It was the view of those present that the factories should not start before October 15, and it was determined to present an expression to this effect to the manufacturers. It is understood that nearly all of the latter have agreed to defer the beginning of operations until that date, so that deliveries of Glass may be expected about November 1. Jobbers' quotations from jobbers' list, October 1, 1906, are as follows: Greater New York, single, 90 and 5; double, 90 and 10 per cent. discount, though 90 and 15 per cent. for both single and double strength is sometimes obtainable. Eastern District, except the Boston District, 90 and 10 per cent. discount for all sizes of single and double strength. Boston District, 80 and 15 for all sizes of single and double strength.

**Linseed Oil.**—Purchases continue on a small scale, buyers waiting for a possibly lower scale, buyers waiting for a possibly lower market. The crop of seed is believed to be considerably larger than that of last year, which in the ordinary course of things would have a tendency to depreciate the price. Other influences may, however, develop to keep quotations about where they now are. New York quotations are as follows, according to quality and seller: City Raw, 38 to 39 cents per gal.; out-of-town Raw, 36 to 39 cents per gal. Boiled Oil is 1 to 2 cents per gal. over Raw.

**Spirits Turpentine.**—A quiet demand prevails with the market somewhat higher than at our last report. New York quotations are as follows, according to quantity: Oil Barrels, 64 to 64½ cents; Machine Made Barrels, 64½ to 65 cents per gal.

### STEVENS ARMS ADVERTISING CONTEST FOR MERCHANTS.

**J.** STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., has inaugurated an advertising prize contest the purpose of which is to stimulate interest on the part of the merchant in advertising in his local papers the company's line of Rifles, Shotguns and Pistols. The contest began August 15 and will terminate on November 15. Prizes aggregating \$1000 worth of Stevens Arms will be awarded to the successful contestants, the first prize consisting of 10 of the company's No. 350 Double Barrel Guns, valued at \$25 each, or \$250 in all. Ten prizes, each consisting of 10 Guns, Rifles or Pistols, will be awarded, delivered free of all cost to the prize winners. These prizes will be given for the first 10 best advertisements appearing in the merchants' local papers during the period named above. Advertisements will be judged, first, for strength and forcefulness of copy—that is, convincing and original reasons and arguments why Stevens Arms should be bought by the consumer or why the merchant sells and recommends them, and, second, for general effectiveness of typographical construction, i. e., eye-catching qualities. Each advertisement submitted must be largely in reference to Stevens Rifles, Shotguns, Pistols and accessories, though incidental mention of other lines of Sporting Goods will be permitted. The compositor setting up each prize winning advertisement will also be remembered with a Stevens Favorite No. 17 Rifle as a prize. Merchants who desire to take part in this interesting and stimulat-

ing contest can obtain full particulars in regard to the conditions on application to the company.

### OHIO HARDWARE ASSOCIATION.

**T**HE Executive Committee of the Ohio Hardware Association met in Columbus September 5. A great many matters in connection with the next annual convention on February 26, 27 and 28, 1907, at Columbus, were discussed. Headquarters for the meeting will be at the Southern Hotel, the sessions being held in the assembly hall. This hall is a comfortable, well lighted room, large enough to accommodate all the members. A Hardware exhibition will be held in connection with the convention. The exhibit hall will be entirely separate and apart from the hotel. The forenoons will be devoted to the inspection and study of exhibits and the afternoons to business sessions. A number of interesting features are being planned for the meeting.

### TRADE ITEMS.

E. P. STOUGHTON, vice-president of the Mille's Falls Company, and manager of the New York house, arrived in New York September 4, from a trip to Europe begun June 30. Mr. Stoughton, accompanied by his daughter, visited Great Britain and the more important places on the Continent as far south as Rome and north to the Trossachs in Scotland. Such contact as he had with the trade, a large portion of the company's product going abroad, developed the fact that American manufacturers were in many cases six months behind in European deliveries. Business in Europe generally was also very good.

BEALL BROS., Alton, Ill., have issued a hanger in colors, which gives views of their several plants in that city. The products of the company include Miners' Tools and Supplies, Shovels, Spades and Scoops, and Heavy Hammers, Railroad Track Tools, &c.

### AMONG THE HARDWARE TRADE.

Myrtle Point Hardware Company has succeeded to the business of McCloske & Mehl, in Myrtle Point, Oregon. The company will carry a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods. The company is occupying a new building 50 x 90 ft. in size.

John Hart has purchased the store of W. H. Kennedy in Castana, Iowa, and will carry a retail stock, including Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods and Harness.

James & Hawkins, Jamaica, N. Y., who handle General Hardware and Paints, about October 1 will open a branch store at Hempstead, N. Y. This will make three stores operated by them, the third being at Rockville Center.

E. R. Snyder has purchased the stock of Stoves and Hardware of Jos. B. Ganter, corner of Schuylkill avenue and Jefferson street, Reading, Pa. Mr. Ganter will now devote his whole time to the real estate business.

The Hardware business of Barton & Goodwin, Eldorado, Ark., has been sold to J. S. McWilliams & Son.

H. P. Hill, Kersey, Colo., has sold his Hardware store to J. B. Killin.

J. E. Scott has bought out the Hardware business of Louis Smith, Hawarden, Iowa.

C. W. Bell, Hays, Kan., has sold his Hardware, Stove, and Tinware business to H. H. Winters.

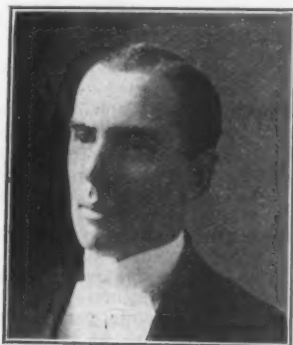


## West Virginia Retail Hardware Association.

**T**HE first meeting of the West Virginia Retail Hardware Association was held in the Board of Trade rooms of the city of Wheeling on September 5 and 6, with an excellent attendance of the merchants of the State. This meeting was the outgrowth of informal conferences held within the past few months when temporary officers were chosen and steps taken looking to the formation of an organization of the retail merchants of the State. It was a very successful and satisfactory meeting.

### Organization.

The convention was called to order at 1.30 p.m. by the temporary president, F. R. Clelland of Fairmont. The other officers representing the temporary organization, J. H. Krepps of Morgantown, and J. H. Morgan of Mor-



J. H. KREPPS,



J. H. MORGAN,

gantown, the secretary and treasurer respectively, were also present. Immediately after the opening of the convention T. B. Fry, of Keyser, made a motion that the temporary organization be made permanent. This motion was carried by the unanimous vote of the convention.

### Addresses.

R. R. Williams, of New York, Hardware Editor of *The Iron Age*, then addressed the convention, speaking on the advantages of such an organization to the retail Hardware trade, and referring to some of the important trade questions which present themselves for consideration. Mr. Williams was followed by Sharon E. Jones, of Richmond, Ind., representing the National Retail Hardware Association. His speech, which touched upon business methods, the advantages of organization, and the work of the National Association, was listened to with appreciation and aroused much enthusiasm. Mr. Jones, from his experience and success as a merchant, his prominent identification with retail Hardware association matters, his attractive personality, and his effectiveness as a speaker, is a peculiarly acceptable and useful representative of the National Association. Addresses touching upon practical questions were also made by C. S. Davis of Oakland, Md., and Louis Heiner of Wheeling.

### Sessions of the Convention.

At the opening session much progress was made in the work of organization, including the adoption of the constitution and the settlement of questions in regard to the work of the association. A number of details in connection with the organization, appointment of committees, adoption of resolutions, &c., received attention on Thursday. The earnest and practical way in which the business was transacted and the work of the organization taken hold of promised well for the success of the movement.

### Constitution and By-Laws.

In proceeding to the adoption of the constitution and by-laws for the government of the organization the convention reviewed the constitutions and by-laws of several

of the States and decided to make that of Indiana the basis for West Virginia, with such changes and additions as would render it adapted to the needs of the new association. After some discussion it was decided that the organization be named the West Virginia Retail Hardware Association, that the membership fee be fixed at \$5.00 per annum, that the association have two vice-presidents, and that the regular annual meeting be held on the second Tuesday in February. The constitution embodying these provisions and others for the government of the association is given below.

### Entertainment.

W. P. Heiskell, vice-president of the Ott-Heiskell Hardware Company, Wheeling, was unremitting in his attention to the delegates, and the courtesies extended by him were very much appreciated. On the evening of the opening day the Ott-Heiskell Hardware Company gave an entertainment at the Fort Henry Club, which was greatly enjoyed and afforded a very pleasant opportunity for the social and informal meeting of the members.

### Officers.

The following are the officers of the association for the present year:

PRESIDENT, F. R. Clelland, Fairmont.  
VICE-PRESIDENTS: C. D. Kyle, Wellsburg; C. P. Moore, Ravenswood.  
SECRETARY, J. H. Krepps, Morgantown.  
TREASURER, J. H. Morgan, Morgantown.

### Committees.

The president appointed the following committees:

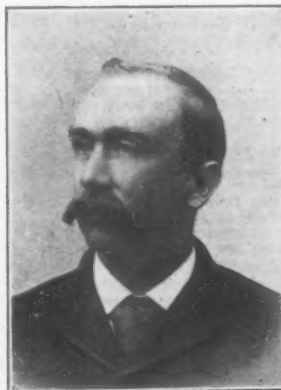
EXECUTIVE: H. C. Kalbitzer, Wheeling; T. B. Fry, Keyser; C. P. Moore, Ravenswood; president and secretary *ex-officio*.  
AUDITING: A. J. Hess, Mannington; Lawrence Hoge, Wheeling; C. S. Davis, Oakland, Md.  
RESOLUTIONS: T. B. Fry, Keyser; C. R. Wolf, Cameron; T. S. Sadler, Ft. Marion, Pa.

### Resolutions of Thanks.

The following resolutions, the first two of which were reported by the Committee on Resolutions and the others by the Executive Committee, were adopted by the association:

That the West Virginia Retail Hardware Association wishes to extend a vote of thanks to the Board of Trade of the city of Wheeling for the use of their rooms and for their kindness and interest shown in our behalf during the sessions of our organization;

We also extend a vote of thanks to the Ott-Heiskell Hardware Company for their courtesy and the entertainment of our



C. S. DAVIS.



C. D. KYLE.

organization at the Ft. Henry Club on Wednesday evening, September 5;

That this association had in the presence of R. R. Williams of *The Iron Age* of New York and Sharon E. Jones of the National Hardware Association, of Richmond, Ind., efficient instructors in the organization of our association, that we tender our sincere thanks to the two gentlemen for the interest they manifested in our behalf;

That a copy of these resolutions be sent to each of them and also spread on the minutes of the association.

### Next Place of Meeting.

Invitations were extended to the association to hold their next meeting in Wheeling, Parkersburg, Fairmont, Keyser and Clarksburg. After some discussion in regard to the matter, on motion of Leslie Hawker the invitation to meet in Clarksburg on the second Tuesday in February, 1907, was accepted.

### Membership.

Owing to the excellent work done by the gentlemen who were active in forming the association a large number of the merchants of the State were led to express their interest in the movement and their purpose to become identified with the association. Not all of these were able to be present at the Wheeling meeting, but the association begins its work with the hearty co-operation of a good proportion of the representative merchants of the State. Those who have become actively identified with the movement, or have expressed their interest in it, are as follows:

ALDERSON. Alderson Hardware Co. G. W. Graves. W. C. Hamlet. J. W. Hedrick. Johnson & Gwinn.	MANNINGTON. W. P. Mason & Co. A. J. Hess. T. M. Rose.
ALFRED. H. H. Fling & Son.	MARLINGTON. C. J. Richardson.
ALMA. G. B. Strathers.	MARTINSBURG. H. S. Cushwa.
ANSTED. A. E. Bevis.	MONTGOMERY. Montgomery Hardware Co.
AUBURN. Heckert & Farnsworth.	MORGANTOWN. H. C. Baker Hardware Co. Barbe & Davis. J. M. Coburn.
BECKLEY. J. C. Earnest.	Morgantown Hardware Co. Pickenbaugh & Kerns.
BELMONT. Raleigh Hardware Co.	MOUNT HOPE. L. C. Patterson.
BERKELEY SPRINGS. Scrimgeour & Turner.	NEW HAVEN. Baty Bros.
BOONE & Hunter.	NORTH FORK. R. R. Roberts.
BLACKSVILLE. McNeeley Bros.	PARKERSBURG. Rector Bros. & Hardin.
BLUEFIELD. Eureka Hardware Co.	PARSONS. Corrick Hardware Co.
M. G. Whitlow.	PARSONS Hardware Co.
BRAMWELL. W. A. Lee.	PENNSBOROUGH. Stewart & Wilson.
BRANDONVILLE. L. F. Myers.	POINT PLEASANT. J. W. Rhoades & Co.
BUCKHANNON. Buckhannon Hardware Co.	RAVENSWOOD. J. A. McIntosh & Son.
Hall Hardware Co.	C. P. Moore.
Upshur Hardware Co.	REEDY. Jesse Roach.
BUFFALO. Charles Harris.	RIPLEY. Ripley Hardware Co.
BURNSVILLE. H. J. Lloyd.	RONCEVERTE. Bob Smith Hardware Co.
CAIRO. Greer Supply Co.	ROWLESBURG. Chas. T. Brown.
CAMERON. J. D. Owens.	SHEPARDSTOWN. Jas. W. McGarry.
CASSVILLE. W. A. Tucker.	SHEPARDSTOWN. H. C. Martin.
CHARLESTON. G. W. Gates.	SISTERSVILLE. C. D. Wysong.
CLARKSBURG. E. R. Davis & Co.	SUMMERSVILLE. Tyler County Hardware Co.
COALTON. G. J. Stanton.	GEO. H. Alderson.
CRESTON. C. C. & W. E. Bee.	TANNER. A. H. Stalder.
ELIZABETH. Kirchner Hardware Co.	TERRA ALTA. S. H. Jackson & Co.
ELKINS. Elkins Hardware & Furniture Co.	W. T. White.
ELM GROVE. N. B. Cecil.	THOMAS. G. W. McIntire & Sons.
FAIRMONT. Geo. F. Amos & Co.	WELLSBURG. Chas. D. Kyle & Co.
Thomas W. Arnett.	J. M. Walker & Co.
Marlon Hardware Co.	WESTON. E. J. Kane Co.
PAYETTEVILLE. J. M. Koontz.	Kane Hardware Co.
FRANKFORD. T. W. Shields.	WEST UNION. Cox Bros.
FRIENDLEY. A. L. Stewart.	WHEELING. Gribble & Tucker.
HEDGESVILLE. Geo. L. Kreglow.	WHEELING. Geo. W. Caldaugh & Bro.
HUNTINGTON. Koontz Hardware Co.	T. A. Hoge & Co.
KEYSER. Sleever Hardware Co.	WILLIAMSON. A. H. Beall Hardware Co.
KINGWOOD. E. J. Bowermaster.	WORTHINGTON. Thompson & Ireland.
LEWISBURG. Bell & Campbell.	PT. MARION, PA. F. S. Sadler.
	OAKLAND, MD. J. M. Davis & Son.

### C. S. DAVIS'S PAPERS.

C. S. Davis of J. M. Davis & Son, Oakland, Md., who is an energetic and valued member of the association, read two interesting papers, on cultivating holiday trade, and catalogue house and department store competition, as follows:

#### How to Cultivate Holiday Trade.

We find the most important thing is to advertise or make display in some way that will draw the public to

your place of business. This can be accomplished in various ways, according to the line of goods you want to push at this season of the year.

If you have a line of tinware, granite ware, wooden ware or small Hardware in stock that you want to close out, fill a large show window full of everything that can be sold at 10 cents, costing from 40 cents to \$1 a dozen, placing a large muslin sign on outside, "Your Xmas Gift for 10 Cents, Walk In." Place cards in window reading as follows:

*Your choice for 10 cents.*

*Reduced for Xmas to 10 cents.*

*Now is your chance to buy a Xmas gift for 10 cents.*

*See our line of Xmas goods on inside.*

This will help bring the people in the store. Then arrange the store on the same line as far as possible. On seasonable goods in 10, 25, 35 and 50 cent counters or departments put cards with prices marked in plain figures, as for example:

*All goods on this counter 25 cents.*

*Your choice for 50 cents.*

This will save time and give your customers the benefit of knowing the price of all the goods you have on display, and through them reach other customers. Try it and you will be surprised to see how many of the little things you have had in the store for months will be closed out, making room for a new stock and better selling goods.

### SILVERWARE, CARVERS, &C.

Now take your special line of holiday goods, such as silverware, carvers, scissors, razors, fancy household articles, suitable for holiday presents, and place them on top of the show cases and most attractive places, making an effort to sell those goods that afford a better profit than a cheaper line used to advertise and bring people into the store. Other lines can be followed up in the same way.

### RANGES AND COOKING UTENSILS.

If you have any particular line of ranges you are making a run on have one of your salesmen set up a range, blacken it nicely, connect with your furnace or stove pipe in store room, have a little fire in it during the busy part of the day, placing around it a full line of cooking utensils of the latest and most improved kind that go to make it easy for the housewife and at the same time afford a profit. Study all the points of your range so as to be able to explain fully to a customer the many good points found in your line, and where it can be done put on exhibition a loaf of bread or a cake that will go to show the baking qualities of the range. Have a teakettle full of boiling water, and the steam will draw the attention of all who come in the store. Place in the newspapers attractive ads with sentiments like the following:

*No more suitable Christmas presents can be found for the housewife than one of our Steel Ranges.*

*Make home happy Xmas by buying your wife a Steel Range.*

*Now on exhibition at our store the latest line of Stoves and Ranges suitable for Xmas gifts.*

*The way to insure a good turkey dinner Christmas is to buy one of our Steel Ranges. Our word for it the housewife will furnish the turkey.*

Hand out circulars to the effect that at a fixed hour during the day you will have a free exhibition of actual work and tests of the latest and most improved Ranges at your store, giving all customers circulars and cuts of not only Ranges but any other specialties, and you will be surprised to see how trade will be attracted, not only during the holidays, but throughout the year.

### Catalogue House and Department Store Competition.

We have read with interest the articles as they appeared in *The Iron Age* on Catalogue House and Department Store Competition, but so far we fail to find any one that from our view of the subject quite covers the ground. That the catalogue house and department store have come to stay no one doubts, and that the jobber and retail merchant have to meet them on every hand is clearly demonstrated. Just what plan to adopt that will be best for all is a far reaching question, but after carefully studying the question from the retailers' standpoint we have concluded that the main trouble grows out of prices more than anything else. In order to buy goods to the best advantage the department store or catalogue house

#### BUY THEIR GOODS FROM THE MANUFACTURERS

as far as possible in such quantities as will enable them to obtain best jobbers' prices. This gives the jobber very little chance to sell such stores except on such lines as are controlled by the jobber or the Jobbers' Association, placing the department store or catalogue house on equal footing with the jobber, so that they can sell their goods at about the jobbers' price direct to the



consumer, thus cutting the small retail hardware merchant's profit so close he cannot compete. We believe this is the main difficulty in the way, for our experience has been the consumer is willing to buy from his home merchant as a rule provided he can sell him at same price, using the catalogue more as a guide to go by than to order from. But in order to do this the retail merchant must buy from first hands, and at the same price as the small jobber or catalogue house.

#### WHERE WE CAN BUY DIRECT

at jobbers' prices, we have no trouble to meet the catalogue house and sell at a fair profit. In large cities the retail merchant has to compete with the department store; in small towns and country with catalogue houses, and as we see it the fight is between the manufacturers and jobbers as to whether the manufacturer will try to hold up the jobber to the downfall of the retail merchant, or sell the retail merchant direct at the same prices as given to the catalogue houses, thus giving him same opportunity to compete in price. The retail merchant also finds himself very much handicapped by the small jobbers, not only in the hardware line but many others, from the fact they cannot sell the best Hardware trade, and in order to sell call on planing mill men, blacksmiths, contractors, and in many cases farmers, quoting them jobbers' prices. This cuts the home merchant out of what rightfully belongs to him, and in many places has compelled the best and largest retail merchants

#### TO GO INTO THE JOBBING BUSINESS

to some extent in order to get on the jobbers' list, when they are nothing more than large retail stores and should be treated as such. At the present rate of increase on this line, it will not be long until exclusive retail Hardware stores will be a thing of the past, as it will not pay any one to start the Hardware business unless he can get on jobbers' list or go in on the line of department stores and catalogue houses. If the jobbers' association is going to hold on and stand between the manufacturer and merchant, it will be necessary for the retailer to take steps along this line so as to become a jobber.

#### COMBINATIONS.

It is very apparent to the retail merchant that it will not be long until it will be impossible for the small dealer to make anything on staple goods, for we have yet to find where combination prices have been of any benefit to merchants in general, but only to the manufacturers and those receiving large rebates. The forming of these large combinations we believe is more disastrous to the retail Hardware trade than the catalogue houses and department stores, and here is the chance for the jobber and jobbers' association to show their hand and to help override the combinations by refusing to buy from them and buying from independent factories or starting factories themselves on such lines as cannot be bought of the independent factories.

It is impossible for the retailers to meet them, but the jobbers' association can work an influence strong enough to control the market on any line in the Hardware business if they so desire, and thus win favor with the retail merchant. Without such steps taken by the jobbers the retail merchant has no other course to pursue than to buy direct from the independent manufacturers on all lines as far as possible.

### CONSTITUTION AND BY-LAWS.

#### PREAMBLE.

The West Virginia Retail Hardware Association is an organization intended to include in its membership all legitimate dealers in Hardware in the State of West Virginia, who conduct their business in a manner not prejudicial to the general welfare of the Hardware trade; all membership being subject to the approval of the Executive Committee before final acceptance. The trade has long recognized the necessity for co-operative work in protection against trade abuses. It is the purpose of the West Virginia Retail Hardware Association to furnish such protection as far as possible. As such protection is only obtainable through the medium of a large and interested membership, we earnestly invite the attention of all dealers who are not members to the end that they may see the necessity of joining their influence to ours in this work.

#### RESOLUTIONS.

Whereas, Some manufacturers and wholesale dealers in general Hardware, Stoves, Tinware and kindred lines persist in selling their lines through illegitimate channels to our injury and detriment, placing us toward our customers in the light of extortioners, causing endless trouble, and

Whereas, The system of protecting us from this wrong is ineffective, it is absolutely necessary to perfect such a system by united action which will remove these evils from which we have suffered for years; therefore be it

Resolved, That the members of this association confine the purchase of Hardware, Stoves, Tinware and kindred lines, as far as practicable, to manufacturers and wholesale dealers who sell goods to firms that are regularly engaged in the retail Hardware business, as defined in these resolutions.

Resolved, That it is the sense of this association that the interpretation of the term "retail Hardware dealer," as set forth in the above resolution, to entitle him to purchase Hardware, Tinware and kindred lines, be construed to mean any person having an established place of business and carrying a line

of Hardware, Stoves, Tinware and such goods as are usually kept in a first-class Hardware store; excepting in places where there are no regular Hardware stores. General stores who do not use the line in a way that demoralizes the trade, and any other store not objectionable to the regular dealers in such territory, shall be construed as legitimate.

Resolved, That it is not the intention of the above resolutions to prevent the interchange of goods mentioned between manufacturers and wholesale dealers in such goods, or for export trade, and that the further interpretation of these resolutions is vested in the Executive Committee with power. The following are exempt from these resolutions: The United States Government, railroads and such manufacturing industries and companies as the Executive Committee may approve, for such goods as are necessary for their respective lines of business.

Resolved, That any manufacturer or jobber in Hardware, Stoves, Tinware or kindred goods furnishing net prices or any discount from list prices, contrary to the foregoing resolutions, either by themselves, employees or agents, shall be considered as disapproving the above resolutions.

Resolved, That this association shall, as far as it lies in its power, keep a record of all goods sold and by whom sold through illegitimate channels, and of all other violations of these resolutions.

Resolved, That every member of this association is constituted a committee of one, and is expected to report to proper officers any violation of these resolutions.

Resolved, That it is the sense of this association that bids direct to consumers or contractors by jobbers or manufacturers, upon any kind of finishing or rough Hardware entering into the construction of buildings, is injurious to the retail trade, and that all such bids should be made by or through a regular Hardware dealer.

Resolved, That all meetings of the State association should be closed meetings, and that the published reports of the proceedings of the same should be under the supervision of a Press Committee.

Resolved, That these measures are just and necessary for our welfare, and it is expected that their rigid enforcement will be observed.

Resolved, That this convention indorses the above and urges its officers to use their best efforts to bring about the further formation of State associations, so as to insure a greater National Association, with the end in view that a uniform system of protection for the trade will prevail throughout the country.

#### ARTICLE I. NAME.

The name of this organization shall be the West Virginia Retail Hardware Association, branch of the National Association.

#### ARTICLE II. OFFICERS.

The officers of this association shall be: One president, two vice-presidents, one secretary and one treasurer, who shall be elected at the regular meeting in February of each year.

#### ARTICLE III. ORDER OF BUSINESS.

The order of business shall be:

1. Roll call of officers.
2. Reading of minutes of last regular and called meetings.
3. Reports of committees.
4. New and unfinished business.
5. Propositions for the good of the association.
6. Adjournment.

#### ARTICLE IV. MEETINGS.

The regular meetings of this association shall be held annually, on the second Tuesday of February of each year, at such place as the members present at any regular meeting may decide.

#### ARTICLE V. MEETINGS.

Any person or company who is now or shall hereafter engage in the retail Hardware business and carry a full and complete assortment of the same, may become a member of this association by making application to the secretary and paying into the treasury the amount of dues prescribed in the by-laws.

#### ARTICLE VI. ADMISSION FEE AND DUES.

The admission fee to membership shall be \$5, payable in advance, which fee shall include the dues until the regular meeting in February following. The annual dues shall be \$5, payable at each regular meeting in February.

#### ARTICLE VII. COMMITTEES.

The president shall appoint a committee of three, who shall, together with the president and secretary, constitute an Executive Committee. He shall also appoint an Auditing Committee of three, who shall serve during his term of office.

#### ARTICLE VIII. DUTIES OF OFFICERS AND COMMITTEES.

Section 1. It shall be the duty of the president to preside over all regular and called meetings, to exercise supervisory control over the affairs of the association, to carry out and enforce all measures adopted by the association, and to fill all vacancies in the offices by appointment.

Sec. 2. It shall be the duty of the first vice-president to officiate for the president in his absence or disability, and in the absence of the first vice-president the second vice-president will officiate.

Sec. 3. It shall be the duty of the secretary and treasurer to keep accurately the minutes of all regular and called meetings of the association, to keep correctly the account of all money received and disbursed, to issue certificates of membership to all members and to render a correct account of the same to the association at its regular meetings, and perform such other duties as may be requested of them from time to time.

Sec. 4. It shall be the duty of the Executive Committee to take charge of and settle all questions of dispute or otherwise that may be referred to them, to act in conjunction with the president in the general supervision over the association, and to make report of the same at the next regular meeting.

#### ARTICLE IX. VOTING.

Section 1. Each person or firm holding membership shall be entitled to one vote only on all subjects and at the election of officers.

Sec. 2. All questions introduced by motion shall be decided by a majority vote of all members present.

Sec. 3. All changes in the constitution and by-laws shall require a two-third majority vote of all members present.

#### ARTICLE X. AMENDMENTS

Thirty days' notice shall be given to the association of any proposed change in the constitution and by-laws, except in case of emergency, when the rules may be suspended by a majority vote of all members present and such changes taken up for immediate action.

## ARTICLE XI. QUORUM.

Ten members in good standing in the association shall constitute a quorum.

Three members of the Executive Committee at called meetings shall constitute a quorum.

## ARTICLE XII. REPRESENTATION.

All persons, firms or companies holding membership shall be represented at any regular or called meeting in person and not by proxy.

## ARTICLE XIII. OFFENSE.

In case of a violation of the resolutions of this association by any Hardware manufacturer or jobber, thereby affecting the business of any member of this organization, the member thus affected shall call on or correspond with such manufacturers or jobbers and endeavor to adjust the same, and if not satisfactorily adjusted, he shall then notify the secretary of his action, giving sufficient evidence as to the facts in the case, who shall immediately take the matter up, and if not then adjusted, the secretary shall present the matter to the National Association for adjustment, and if not satisfactorily settled shall notify each and every member of the association, who shall discontinue to patronize such manufacturer or jobber.

## ARTICLE XIV.

By subscribing to the constitution and by-laws, persons, firms and corporations thereby agree and are pledged to conduct their business in accordance with the same. They also agree to carry out explicitly all requests of the Executive Committee, especially in matters relating to the violation of the constitution and by-laws by jobbers and manufacturers or resolutions adopted at any regular meeting of the association.

## Portraits.

We give portraits of several of the officers of the newly formed association in connection with this report, including the first vice-president, secretary and treasurer. Photographs of Messrs. McClelland and Moore, president and second vice-president respectively, were received too late for reproduction herewith, and the portraits of these officials will be given in our next issue.

## DEATH OF B. C. QUINBY.

**B**YRON C. QUINBY of Rocky Nook, Kingston, Mass., 64 years of age, was killed in an automobile accident August 30. While in his car he collided with a cart on the road, causing injuries from which Mr. Quinby died in a few minutes. Mr. Quinby went to Plymouth, Mass., 36 years ago and became connected with the firm of Cobb & Drew, not long afterward becoming a member of the firm and eventually becoming the managing partner, a position he held at the time of his death. Under his management the business increased greatly and a branch factory was established at Rock Falls, Ill., to put the firm in closer touch with the extensive reaper factories of the West, which used a large amount of its products, the output of the two factories being about 400 tons per month. Mr. Quinby was widely known throughout the country in business circles, and highly esteemed for his ability and his personal qualities.

## TALKING POINTS ON PUMPS.

## F. E. Myers &amp; Bro.

**M**ANY Hardware merchants have found Pumps of good quality a desirable line to handle and push energetically. That the manufacturers are ready and eager to do all they can to aid the Hardware merchant in getting his share of the business in this line was pointed out in a recent article in these columns. In this connection F. E. Myers & Bro., Ashland, Ohio, issue an interesting pamphlet entitled "Points on Pumps," which is especially designed for the instruction of the company's salesmen as well as merchants. The firm suggests the importance of the merchant confining his efforts to one first-class line of goods, the sale of which he can control. It is pointed out that in this way less money is invested, and having an exclusive line of goods prices can be maintained on a profitable basis, while a business can be worked up by the enterprising merchant which cannot be easily taken away from him. In addition to general suggestions on the subject of Pumps the pamphlet illustrates and describes at length the Myers line and its various patented features.

## W. &amp; B. Douglas.

W. & B. Douglas, Middletown, Conn., have just issued an attractively printed booklet, which shows the

ordinary run of small Hand Pumps, Hydrants, &c. It is designed to meet the wants of the small consumer, and merchant, and combines in small compass a large variety of goods. The manufacturers are constantly adding to their assortment, and in order to meet the competition of those who are putting out light Pumps a line of Pipe Pumps has been put on the market. Their manufactures now embrace over 500 different styles, and a vast number of sizes. Another booklet will soon be issued showing some of their Electric Outfits. It is interesting to note that the house of W. & B. Douglas, of which Edward C. Douglas is the treasurer and manager, is one of the oldest in this line in the world, having been founded by William and Benjamin Douglas in 1832 and being now in the hands of the third generation.

## PRICE-LISTS, CIRCULARS, &amp;c.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

AVONDALE STOVE & FOUNDRY COMPANY, Birmingham, Ala.: Large illustrated catalogue of Ranges, Heating Stoves, Stove Repairs, Stove Hollowware, Ventilators, &c.

STANDARD SCALE & SUPPLY COMPANY, Pittsburgh, Pa.: Booklets referring to Morris Duck Coal and Wood Bags and Baskets, Wheelbarrows and Standard Scales.

UNITED STATES CARTRIDGE COMPANY, Lowell, Mass.: Illustrated price-list of Ammunition and Paper and Brass Shot Shells.

UNION FIRE ARMS COMPANY, Toledo, Ohio: Illustrated catalogue of Single and Double Barreled Shotguns and Six-Shot Magazine Shotguns, giving valuable information in regard to handling, testing, ordering and loads.

KEYSTONE SHOVEL WORKS, Philadelphia, Pa.; Ames Shovel & Tool Company, owner: Price-list of Shovels, Spades, Scoops and Drainage Tools.

F. H. LAWSON COMPANY, Cincinnati, Ohio: Catalogue No. 11, referring to Tin, Japanned and Galvanized Ware, Sheet Iron Stoves and Specialties.

GOODWIN & KINTZ COMPANY, Winsted, Conn.: Large illustrated catalogue of Gas and Electric Portables, Electroliners and Newels.

SARGENT & Co., New Haven, Conn., and 149-153 Leonard street, New York: Sixteen-page illustrated booklet of "How to Sell Builders' Hardware," particularly Sargent's Artistic Hardware.

## REQUESTS FOR CATALOGUES, &amp;c.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM HOFFMANN HARDWARE COMPANY, Scribner, Neb., of which E. C. Hoffmann, formerly with Majestic Mfg. Company, is manager and treasurer.

FROM SMITH HARDWARE COMPANY, successor to S. F. Kennedy, South Tacoma, Wash.

FROM GOOD-NORMAN HARDWARE COMPANY, Semour, Mo., which has succeeded to the Hardware, Stove, Implement, Paint and Sporting Goods business of J. F. Norman.

FROM THE MERCANTILE COMPANY, Nowata, Ind. Ter., successor to the Hardware, Tinware, Sporting Goods and Harness business of W. P. Ringo.



## ONTARIO RETAIL HARDWARE CONVENTION.

**T**HE Ontario Retail Hardware and Stove Dealers' Association met in semiannual convention at Toronto on September 4 and 5. The roll call showed the following members in attendance:

F. A. Richard, Verner.	J. B. Ferguson, West Lorne.
G. H. Clark, Niagara Falls.	Albert Wideman, Markham.
James D. Smith, Baysville.	Robert Lillie, Sturgeon Falls.
J. E. Westcott, Alisa Craig.	J. Dandle, Streetsville.
Jas. S. Allen, Burlington.	F. W. Silvester, Stouffville.
E. P. Paulin, Goderich.	H. Jones & Son, Uxbridge.
L. Wale, Stevensville.	H. E. Patterson, Drayton.
C. E. Noble, Dundalk.	W. B. Clifton, Alliston.
D. A. McNab, Orillia.	J. Walton Peart, St. Mary's.
John Caslor, Toronto.	Fred. W. Otton, Barrie.
J. W. Peacock, Toronto.	W. G. Scott, Mount Forest.
Robert Smith, Bolton.	Adolph Henry, Orono.
D. H. Becker, New Hamburg.	J. S. Hall, Toronto.
Allen Betchel, Baden.	A. W. Humphries, Parkhill.
G. A. Henry, Oshawa.	T. R. Loughheed, Gore Bay.
Weston Wrigley, Toronto.	Fred. C. Lariviere, Montreal.
Latimer & Elliott, Chesley.	H. T. Hunter, Toronto.
Joseph Heale, Toronto.	

In his opening address President A. W. Humphries referred to the progress made since the organization of the association less than five months before and prophesied that it would not be long before the results of organization would be felt by every Hardware dealer in the province.

### Over 150 Members.

Secretary Weston Wrigley, Toronto, reported having written nearly 3000 circular letters and communications on association business since the convention on May 15, and reported a substantial gain in membership, there now being over 150 on the membership roll. He urged the appointment of a permanent organizer, however. Favorable action on the proposed Dominion organization and on the adoption of an account collection system was also urged.

Treasurer John Caslor, Toronto, reported a balance to the credit of the association amounting to \$120.

### Trade Grievances.

The Executive Committee reported that certain objectionable market reports which were published in the daily papers have been discontinued, and made the following recommendations:

1. That the association appoint a committee to interview representatives of the Enameled Ware manufacturers and ask them to stamp all seconds as such in plain letters of large size.
2. That the special committee appointed to meet the wholesale representatives request the jobbing houses to have all goods charged at sufficient prices to cover the cost of packing and to do away with all special packing charges.
3. That the special committee to be appointed advise the representatives of the wholesale houses that in future the members of this association will not pay cartage charges at point of shipment.
4. That the special committee urge that wherever manufacturers or jobbers sell to buyers outside the trade the sales be made at a price sufficient to protect the legitimate Hardware dealer.

### Enameled Ware "Seconds."

The report was considered clause by clause. The complaint against Enameled Ware manufacturers was that they were selling "seconds" to department stores and price cutters, and as there was no way of telling firsts from seconds the public was fooled and the regular trade made to look like robbers when they asked a fair price for first-class goods. The recommendation of the committee was adopted, and it was decided that the jobbing association be asked to indorse the request made of the Enameled Ware manufacturers.

### Box and Cartage Charges.

Regarding boxing charges the general opinion expressed was that jobbers should include packing and boxing in their general expense, just as the retailer includes the expense of his Twine, Wrapping Paper and local delivery. This clause was finally left over for action at the next convention, in March, 1907.

Cartage charges were discussed at length, and the suggested resolution was finally adopted by a unanimous vote. The retailer's complaint was that goods bought "f.o.b. cars" and delivered in many cases direct into

cars on railway sidings adjoining warehouses were subject to a charge for cartage amounting to 12 cents minimum on every shipment. They objected to paying their own and the jobber's cartage. The cartage charge is imposed by arrangement between the railway and cartage companies and is legalized by law. Several members reported that they were refusing to pay the charges and were saving considerable by stamping their orders. "F.o.b. cars—we will not pay cartage at shipping points."

### Sales Outside the Trade.

The fourth clause also met with unanimous approval. The sale of goods to persons outside the trade is a very flagrant evil in Canada, encouraged by several retail houses which have got on the jobbers' list.

### Jobbers Will Take Action Next Month.

After adopting these resolutions a special committee was appointed to present them to a special meeting of the jobbers then in session. The committee did so, and after hearing the views of the wholesalers on the matters complained of reported that the subjects would be fully discussed and acted upon at the convention of the Canadian Wholesale Hardware Association to be held at Hamilton next month.

### Hardware Mutual Insurance.

One of the most interesting matters which came before the convention was the report of the Mutual Insurance Committee, presented by J. Walton Peart, St. Mary's. Mr. Peart said that the Ontario Insurance act is such that it would be impossible to organize a mutual company without special legislation, and even then only upon terms entailing a considerable cash deposit and involving a considerable amount of risk to those making the necessary deposit and guarantee to obtain a charter. The difficulties in the way, however, were not insurmountable. Mr. Peart then referred to the experience and methods of Hardware mutual insurance companies in this country and presented figures showing the advantage enjoyed by them over the regular stock companies. He concluded as follows:

The average premiums in Canada appear to be considerably less than in the United States. Hardware dealers' rates averaging possibly 1.5 per cent., against 2.5 per cent.; consequently some close study and examination are necessary before going into the matter of carrying our own insurance. The situation, however, taking the average Canadian fire loss, would stand about as follows, providing that initially we could write 200 policies of an average \$1500 each, a total of \$300,000:

Premiums at 1.5 rate.....	\$4,500
Average Canadian loss for a number of	
years 58 per cent., making.....	\$2,610
Expenses (based on American companies)	
18 per cent.....	810
	<hr/> 3,420
Leaving a balance of.....	\$1,080
for rebates, or 24 per cent.	

### MR. LARIVIERE'S SUGGESTION.

As an alternative Fred. C. Lariviere of Amiot, Le-cours & Lariviere, Montreal, who attended the convention as a fraternal delegate, suggested that if the difficulties in the way of forming a purely Hardware dealers' mutual company were found to be too great that arrangements be made with one of the existing old-line companies or with an insurance underwriter that all the insurance of the members of the association, up to a limit of \$10,000 for each firm, be placed through the secretary. Mr. Lariviere felt certain that in case such an arrangement were made a refund of 20 per cent. of the premium could be obtained by each dealer at once, while an additional percentage could go into the association treasury on an arrangement providing for a division of profits between the underwriters and the association, the latter acting in the capacity of an agent. All this could be done without any risk of any money whatever, the dealers getting a rebate on policies amounting to \$10,000, instead of the limit of \$1500 or \$2000, which a mutual company would have to name.

The report was received and the committee given power to consider the proposals and bring the matter before the next convention in definite shape.

### Other Matters Considered.

Notice of motion was given that at the next convention an amendment would be presented permitting traveling salesmen to become associate members of the association.

A strong resolution was adopted urging the Dominion Government to amend the Criminal Code, which now prevents merchants from combining together to arrange price agreements, while giving this power to trades unions, professional organizations, &c.

The proposition that a Dominion Retail Hardware Association be organized on lines similar to the National Hardware Association in the United States was endorsed, and the Executive Committee will work with the Western Canadian Retail Hardware Association in preparing plans for a national organization.

A special committee was appointed to consider plans for an account collection system, the committee to investigate the systems in use in western Canada and elsewhere and report next March.

### Profits and Costs.

Fred C. Lariviere, of Montreal, on request of the president delivered an interesting address on "Profits and Costs," in part as follows:

The mistake is too often made in marking all merchandise at a fixed advance on cost for profit.

**PADLOCKS.**—Take padlocks for instance. If you marked them at an advance, say of 33 1-3 or 40 per cent., there are lines that you would have to sell at 8, 10 and 12 cents instead of 10, 15 and 20 cents.

It is not a safe course to pursue, to mark goods in this way without regard to their respective classes. One should allow for each article the margin of profit he sees fit. Lines that sell daily can perhaps be struck at a regular percentage of profit that would be insufficient for goods that do not meet with such ready sale but have to lay on the shelves for a long time. The same thing applies to cutlery and other lines.

With me it is always a matter of judgment as to what the goods will bear.

**CARVING SETS.**—I have seen carving sets that cost me the same amount sold at \$6 and at \$7.50, simply because one had the appearance that would bring just that much more profit than the other. Had the regular rate been struck for both their selling prices would have been the same.

**FILES.**—Many merchants sell files on a very small margin. You should grade them as far as you can by sizes, advancing the margin of profit on the large sizes which are not so salable and putting a smaller price on the sizes which are sold daily. Sell them at a fair profit, with more profit on the goods that do not move so quickly, and tie up capital.

**SCISSORS AND SHEARS.**—In scissors every one knows that sizes 5, 5½, 6 and 6½ in., and sizes 7 and 8 in. in shears are the salable sizes. While you make a fair profit on the sale of small sizes you should make a larger profit on the larger lines, because they are more unsalable stock.

**GALVANIZED IRON.**—When buying galvanized iron, many forget about the hoops. In each bundle the hoops weigh considerable. Many lose sight of this. Then the outside sheets are not as good as the others, which is another thing that should be borne in mind and provision made for.

A hearty vote of thanks was tendered Mr. Lariviere for his address and assistance and advice during the convention, which then adjourned. The annual meeting will take place on the second Tuesday in March, 1907.

THE new building of W. A. Guenther & Sons, Owensboro, Ky., will be of larger dimensions than those mentioned in a paragraph in a recent issue. The structure will be 114 x 180 ft., four stories high. It is located on the corner of Locust and Main streets, within two blocks of the Court House, which is in the center of the city. The building is really a block in itself, having streets on three sides and an alley on the fourth, so that plenty of light and air are insured.

THE Todd Hardware & Supply Company, Caney, Kan., has been incorporated with a capital stock of \$25,000. The business was originally established in 1884 under the name of John Todd.

### WOLFF-LANE HARDWARE COMPANY.

**A**FTER a successful business experience of more than 70 years the well-known wholesale Hardware firm of Wolff, Lane & Co., Pittsburgh, has been incorporated under the name of the Wolff-Lane Hardware Company, T. H. Lane, a partner in the concern for 63 years, retiring. Two of the former members of the firm, H. G. Darsie and J. D. Cherry, retain an interest in the new firm, the former as treasurer and the latter as general manager. Edmund D. Graff, a woolen manufacturer, of Worthington, Pa., is the president of the new company, and L. L. Banks, long associated with Park Bros., and agent for the Park Building, is vice-president. H. C. McKee, who was with the old firm for 18 years, has been elected secretary. Wolff, Lane & Co., originally known as Whitmore & Wolff, was one of the big mercantile institutions of early Pittsburgh. The firm organized in 1836 and established itself at what was then the corner of Liberty and St. Clair streets, now the site of the Pittsburgh Life Building. In 1845, immediately after the big fire, from which it escaped unscathed, the firm moved into the Wood street building it has occupied for so long. In 1858 the firm name was changed to Wolff, Duff & Co., and on January 1, 1878, to Wolff, Lane & Co. T. H. Lane, who now retires, first secured employment with the firm in 1843, and 15 years later secured an interest in the company. During the Civil War Mr. Lane and Mr. Duff and their employees left the business for a time and personally engaged in the construction of the fortifications in Allegheny on the present site of Uniondale Cemetery. Since its inception in 1836 the firm has kept an account in the Bank of Pittsburgh continuously, and a firm member has always been represented on the bank directorate, Mr. Lane succeeding Mr. Whitmore about 25 years ago. In the 70 years of its existence the firm has weathered every financial storm and stands to-day more firmly entrenched than ever.

### THE FRASSE COMPANY.

**O**WING to the wholesale demolition of buildings at Cortlandt, Dey and Fulton streets, on Church street, New York, for an adequate site for the terminal in this city of the Hudson Company's tunnels under the North River, the Frasse Company in common with many neighbors has been compelled to move, and is now fitting up a new store at 134 Liberty street, nearby. This business was originally established in 1806, of which there have since been several branches. The company handles all kinds of tools for professional mechanics and amateurs for working wood or metals. The street floor, by means of a dexterous arrangement of specially built shelving, will give increased space for goods although the other store was somewhat larger. There have been added lines of transmission material for the retail trade, such as Belting, Pulleys, Hangers and Couplings, and a complete stock of electrical goods. The business is under the supervision of A. M. Maretzek.

### VAUTIER FILES.

**H**AMMEL, RIGLANDER & CO., importers and exporters, 47 and 49 Maiden lane, New York, have been appointed sole agents in this country for the sale of Vautier Files, which are made in Geneva, Switzerland. The principal market for these Files has heretofore been in Europe, where they are well and favorably known. They are made for all purposes, and special emphasis is laid on their high quality and the length of service given by them.

JOHN BINDLEY, president of the Bindley Hardware Company, Pittsburgh, has been named as one of the representatives of the United States at the Second International Congress of Chambers of Commerce, which meets in Milan, Italy, September 24. Mr. Bindley has been abroad since July, and is expected to return to this country in October.



## NEW AUSTRALIAN DUTIES ON AGRICULTURAL MACHINERY.

FROM OUR SPECIAL CORRESPONDENT.

MELBOURNE, August 10, 1906.

**T**HIS afternoon (Friday, August 10) the Australian House of Representatives unexpectedly raised the duties on Harvesters and Agricultural Implements. *The Iron Age* for some considerable time past has forecasted this increased duty. Most of the Australian newspapers have for some considerable time been agitating for increased duties, in order that Agricultural Implement makers in Australia should be protected from the International Harvester Company.

The action in suddenly increasing the duties was due to one of the Melbourne morning papers securing inside information of the recommendations of the Tariff Commission, which recently completed its labors after long and exhaustive sittings.

The Minister for Customs (Sir William Lyne) immediately after lunch to-day moved the following:

That from the 10th day of August, 1906, at 2 p.m., Victorian time:

a. In addition to the duties of customs imposed by the Customs Tariff, 1902, on the following goods, the following duties shall be imposed on the said goods:

	Per cent.
Manufactures of metal—namely, Stripper Harvesters, Stump-Jump Plows, Strippers, Disk Cultivators, Winnowers, horse or other power.....	12½
Plows, Plow Shares, Harrows, Chaff Cutters and Horse Gear, Cultivators other than disk, Scarifiers, malleable and other castings for Agricultural Implements.....	7½

b. The following duties of customs shall be imposed on the following goods:

	Per cent.
Manufactures of metal—viz.: Combined Corn Sheller, Husker and Bagger, and combined Corn Sheller and Husker (now free).....	25
Corn Shellers and Corn Huskers (now free).....	20
Plow Mold Boards (now free).....	20

c. The following goods shall be free of customs duty:

Manufactures of metal—viz., Hand Worked Rakes and Plows combined, Hay Tedders, Maize Harvesters, Maize Binders, Maize Planters, Mold Board Plates in the rough and not cut into shape, Potato Sorters, Potato Raisers or Diggers.

The resolution was agreed to and the new duties were formally imposed.

After some discussion, Sir William Lyne further moved:

Provided that if the retail price or selling price of any implement or machine made in Australia, similar to that upon which the additional duty is hereby imposed, be raised above such prices ruling in Australia during 1905, the Governor-General may, in pursuance of a joint address by the Senate and the House of Representatives, suspend the collection of such additional duty upon any machine or implement for such time as may be deemed advisable.

That if manufacturers of the machines and the implements made in Australia similar to those upon which additional duties are hereby levied, do not, after the expiration of one year of the passing of the act, pay their workmen engaged in making such machines and implements a fair and reasonable rate of wages, the Governor-General may, in pursuance of a joint address by the Senate and House of Representatives affirming that such fair and reasonable wages are not being paid, suspend the collection of such additional duty upon any machine or implement for such time as may be deemed advisable.

Provided that if within two years of the passing of the act the retail price of Stripper Harvesters made in Australia has been raised above £81, or if after the expiration of two years from the passing of the act the retail price of Stripper Harvesters made in Australia has not been reduced to £70, the Governor-General may, upon the receipt of a joint address from the Senate and the House of Representatives, certifying to the foregoing effect, by proclamation, suspend the collecting of such additional duty of 12½ per cent. for such period as may be deemed advisable.

These resolutions were not passed, but will be taken up later.

### What the New Duties Mean.

The additional duty of 12½ per cent. proposed on Stripper Harvesters, Stump-Jump Plows, Strippers, Disk Cultivators, and Winnowers, brings the total duty on each implement to 25 per cent. The additional duties of 7½ per cent. on Plows, Shares, Harrows, Cultivators, Chaff Cutters, Scarifiers, Malleable Castings, &c., bring the total duty to 20 per cent. The several items on which duties were imposed were free prior to to-day.

When the Federal tariff came into force in 1901, harvesters, after much discussion, were made dutiable at 12½ per cent., a compromise between the 10 per cent.

desired by revenue tariffists and 15 per cent. desired by the opposition party.

There can be little doubt that the duties will find popular favor, although, even with this increase, it seems questionable if the operations of the International Harvester Company in Australia will be affected to any great extent.

### Australian Trade for 1905.

Statistics regarding the exports and imports from and to Australia for the year 1905 are now available from the Government statistician. Imports for the year total £38,000,000 and exports nearly £57,000,000, the imports being in excess of 1904, while exports were of lesser volume.

Of the total value of the imports (£38,000,000) the United States secured less than £4,500,000, Britain sending us £22,000,000 worth, while nearly £11,000,000 came from other countries.

A few extracts may possibly point a moral for American manufacturers. In brass, Britain sent us nearly £20,000 worth, while the United States sent us nothing. In brushware, Britain sent us £90,000, as against £6000 from the United States. Chains, £34,000, as against £4000; cordage and twine, £140,000, as against £5000; electrical material, £141,000, as against £18,000; India rubber goods, £182,000, as against £24,000; iron and steel, £1,430,000, as against £77,000; machinery, £1,000,000, as against £463,000; paints, &c., £263,000, as against £42,000; rails, &c., £110,000, as against £52,000; vehicles, £240,000, as against £100,000.

The above figures are merely selected at random in order to show the value of the trade of this country, and the small proportion of it catered for by the United States.

There are a few other lines where the United States shows up much better, as in tools, where the exports to Australia were £123,000 as against £142,000 from the United Kingdom, and timber, where the United Kingdom only sends us £6000, as against £377,000 from the United States, and oils, where the United Kingdom sends us £155,000, as against £490,000 from the United States.

Cutlery exports from the United States are less than £5000, by comparison with £106,000 from the United Kingdom, while in fancy goods, Glassware, Lamps and Lampware, Leather and Leather Manufactures, Paper Hangings, Ship Fittings, &c., United States exports figure microscopically alongside those from the United Kingdom.

### The Hardware Trade

has presented no new features during the past month. There has been no extension and very little alteration in prices. Fencing Wire has been moving pretty freely, and the demand for rabbit proof Fencing is steadily on the up grade. Australian demands in the way of Wire Netting are illimitable, since it has been proved beyond the shadow of a doubt that the only way to cope with the commonwealth pest, the rabbit, is by continually fencing and fencing again. Rabbits breed so quickly that it is impossible to restrict the number by any methods of poisoning. A specialist has just been imported from Paris at great expense to the country with a view to seeing if it is possible to destroy them by inoculation.

Feeling out here is rather averse to experiments of this kind. There can be no question that the only way of destroying the vermin is by continually hemming them into smaller areas by fencing, and our requirements in rabbit proof Fencing in the past are nothing beside what they will be in the immediate future. The State governments are seriously tackling the problem, and a move is forward for the purpose of manufacturing Wire Netting by prison labor. Just in conclusion, it is worthy of note that no Wire Netting, or at any rate very little, is exported from the United States to this country.

Railway extensions are moving ahead all over the continent, and there is a steady and increasing demand for all sorts of material in the way of Steel Plates, Angle Steel, Steel Tubes, Engine and Tender Tires, Channel Steel, Wagon Tires, Axles, &c.

The building trade is moving ahead steadily all over the Commonwealth, and just at the present moment build-

ing seems to be far and away the most popular form of investment. While of a less speculative turn than most investments, it is perhaps the most satisfactory sign of healthful and solid improvement.

### AN EFFICIENT ORDERING SYSTEM

A PRIME necessity in every well organized business is an efficient system of recording goods needed for stock and following up orders, and back orders so as to secure them as promptly as possible. The requirements of a Hardware stock are so many and varied that they cannot be comprehended by the observation and memory of one man, and the number of items ordered from day to day is too great and scattered among too many houses to be kept track of except by an accurate check system.

The firm of Rising & Thorne, Newark, N. J., handles its buying in a methodical and effective way, employing a series of books from the pages of which the accompanying illustrations are reproduced. All these books are kept in a particular drawer in the office so as to be immediately accessible and easily compared. The first in order of use is the

#### Want Book

in which goods wanted are jotted down as soon as need of them is observed. Entries in this book, Fig. 1, may be made by any member of the force or to save time they may call out to some one in the office to put things down. Pocket pads are also furnished to the clerks for noting articles needed when it is inconvenient to call to the office or go there immediately. The want book is gone over at regular intervals and the items are checked at

✓	5¢ Can Opener	✓	X
✓	Copper Rusts 5/8x7	✓	X
✓	Old Wincing Knife	✓	X
✓	R. J. Bits 1/16"	✓	X

Fig. 1.—Entries in Want Book.

the left as ordered, first collecting the different articles that should be bought from the same place. The first check at the right of the items is placed there when the articles are received; the second right hand check is used when the pages of the want book are finally gone over and the entries canceled by drawing a blue pencil line through them, indicating that all necessary attention has been given.

#### Orders Are Numbered

serially and are written in a duplicating order book about 5¼ by 11 in. in size. The original is sent out

12150	Stanley R & L Co
1	Central Stamping Co.
2	Sargent & Co
3	Simonds Mfg Co.

Fig. 2.—Index of Order Book.

while the carbon copy remains in the book, which is indexed by number on the inside of the front cover as shown in Fig. 2. A copy of an order is reproduced in Fig. 3, being selected instead of the original to show

the checks and entries which it receives in the office routine. The figures at the right of the various entries are put on in pencil after the order goes out and represent the price—in this case fictitious—paid for the last purchase of the same goods. This information is useful in checking prices on incoming bills. It will be noted that consignees are especially requested to number bills to correspond with the order numbers of the firm.

#### Handling Goods Received

All incoming goods are entered up in a receiving book under the name of the firm from which they come, with the date and route of shipment. This is done by

✓ 4/1/06	Mar 19	12152	1/4 Gss Meat Hooks # 84
✓ 4/12	" "	"	1/4 doz Gongs # 30-3"

Fig. 4.—Entries in Back Order Book.

clerks, one checking the work of the others. Then when the bill comes in it is compared with the receiving book for any shortage or excess in the goods received. The copy of the order in the order book is then compared and checked with the receiving book, after which it is cross checked with the invoice, the latter, of course, bearing the order number or numbers in case items from different orders are included in the same shipment.

#### Back Orders.

Goods called for in the order which are not included in the shipment are back ordered, that is they are marked

Order No. <u>12152</u>	
<b>RISING &amp; THORNE,</b> <b>HARDWARE.</b>	
473 and 475 BROAD STREET, Newark, N. J., <u>March 19 1906</u>	
<u>Sargent &amp; Co</u> <u>Leonard St. N.Y.</u>	
Please send us <u>by March Exp.</u>	
<u>+ 1/4 Gss Meat Hooks #84</u>	<u>1.10</u>
<u>+ 1/2 doz Choppers #20</u>	<u>9.00</u>
<u>+ 1/2 doz Gongs #22</u>	<u>1.00</u>
<u>BO 1/4 - Gongs #30-3"</u>	
Please send Bill promptly, numbered as above and oblige.	
Yours Resp'y.	

Fig. 3.—Copy of an Order.

B. O. on the order copy, as shown in Fig. 4, and entered in the back order book to be followed up. In the case of the order illustrated, ¼ gross Meat Hooks only were received, whereas ½ gross were ordered; ¼ gross therefore were back ordered. Of the ¼ dozen 3-in. Gongs, No. 30, none were received; so the entire item is transferred to the back order book, entries appearing as shown in Fig. 4, giving the date and number of the order from which the back order comes. When back orders are received they are checked off and the date on which they come in is entered at the left, as in the cut.

The back order book is frequently gone over and requests are made for early shipment, or if necessary the orders are cancelled and the goods are secured elsewhere.



## Letters from the Trade.

*Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### Wasting Time on the Catalogue Houses.

*To the Editor:* As the days come and go I find that I am not entirely in accord with some of my brethren in the various Hardware associations. I fear we spend too much time in discussing the catalogue house question. There are other questions and problems that are of more vital interest. We are giving the catalogue houses a vast amount of free advertising.

The catalogue houses are here to stay and the sooner we recognize this the better it will be for us.

I confess to a great admiration for their up to date methods, and have made several trips to Chicago to look into their activities and the energy they have displayed, and I have always returned with a very buoyant feeling, lots of animation, new ideas and a greater love for my own retail store, because I had brought with me some new thoughts and plans that I could at once put into practice.

As I stated before, I am not, I fear, in harmony with my brethren on the catalogue house problem, and believe with all my heart that we should put forth our best efforts by judicious advertising, right prices, clean, good stocks and last (but by no means least) the *proper, kindly, cordial* treatment of customers, and then we shall be so busy we shall fail to take notice of or care for catalogue house competition.

MERCHANT.

### A Suggestion as to Catalogues.

*To the Editor:* Permit us while the provocation is still fresh in mind to register a kick against the careless or indifferent method with many manufacturers and jobbers of putting out catalogues without date, often without letter or number to distinguish them from previous editions.

The matter becomes more complicated and annoying when discount sheets are sent out referring to one or other of their catalogues with nothing to indicate which.

We put it down as an axiom that for everybody's sake a catalogue should be numbered or lettered, or better still, dated, like any other important document.

RETAILER.

### Holding Up Manufacturers.

*To the Editor:* Your correspondent in a recent issue hits the nail squarely on the head regarding the holding up of manufacturers in paying for jobbers' catalogues. Some people imagine the manufacturer should contribute to any old cause, even to build a public building in their locality. The tenacity with which many of the State Hardware associations continue to ask for contributions to meet the expense of their yearly meetings is alarming. They seek advertising for their programme books, which are looked over once when received and then laid up and probably never opened again for the year. The State associations and their meetings are a good thing for the merchant and should be continued, but an assessment should be made on each member to meet expenses, if the first fee is not sufficient.

OHIO.

### Gross and Net Profit.

*To the Editor:* An article bought for \$1 and sold for \$1.50 is said to afford a profit of 50 per cent. I am a retail dealer carrying a stock of \$10,000. I sell \$600 worth of goods per week, say, and get \$900 for same—here is your 50 per cent., but let's see:

Interest on stock per week is.....	\$12
Rent of store, \$600 per year, per week.....	12
My time, per week.....	15
My two men, per week.....	24
Total.....	\$63

Deducting this expense bill per week of \$63 leaves only \$237 net profit on the \$600—a little less than 40 per cent. If I sell \$600 worth of goods at \$750, 25 per cent. apparent profit, expense being the same, I get net only \$87, net profit only 15 per cent.

So, my dear Hardware dealer, it costs 10 per cent. to do business, which you must deduct from your outside profit to get at the net profit.

RETAIL.

## MISCELLANEOUS NOTE.

### The Wizard Tandem Adjustable Hanger.

Safety Door Hanger Company, Ashland, Ohio, has recently put on the market the Wizard tandem adjustable hanger, an illustrated description of which appeared in *The Iron Age* several weeks since. This tandem hanger is not only a flexible and stay-on hanger, but has in addition to these features both lateral and vertical adjustments, a fact which was not brought out clearly in the article. All difficulty of doors binding against the buildings is overcome by turning the set screw, and a door which drags at the bottom may be released by turning the hexagon nut. By means of the lateral adjustment the door may be placed as close to the building as desired, and both adjustments are easily accessible in case a roof is placed over the hangers and track. The hanger is guaranteed to run easy on account of the two sets of steel roller bearings, and the weight being divided on two wheels instead of one makes the rail less liable to buckle. The frame and door plate are made of best grade malleable iron, and the entire construction of the hanger is guaranteed to be stronger than the ordinary flexible design.

### Kalor Gas Attachment.

The Willock Mfg. Company, 140 West Forty-second street, New York, is putting on the market the Kalor portable three burner gas attachment, as here shown. Not only can the attachment be used to heat an oven to bake or roast in, but other cooking processes are possible, by merely attaching a flexible rubber tube to a gas bracket, after removing the tip and slipping other end of tube on to a curved brass tube  $\frac{3}{8}$  in. in diameter outside, which can be turned in any direction. Fig. 2 shows the Kalor introduced into firebox of range resting on grate so that the burners are within about  $1\frac{1}{4}$  in. of stove lids. When roasting or baking the Kalor is placed in the oven standing upright, lying down or in the posi-

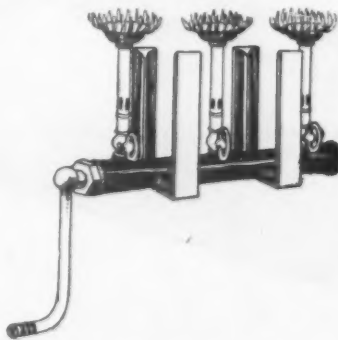


Fig. 1.—Kalor Portable Gas Cooking and Heating Attachment.

tion best suited, the small brass connecting tube serving to keep an oven door open just enough to properly ventilate the oven and allow the products of combustion to escape, as well as supply the flame with necessary oxygen from the surrounding atmosphere. The attachment with intelligent use can also be made to heat the water back so as to accumulate a supply of hot water in the range boiler, full directions concerning which are given in the company's literature. Where much water is wanted two Kalors can be economically and advantageously used, the consumption of gas at ordinary pres-

sure from all three Bunsen burners being, it is said, but 12 cu. ft. an hour. Some of the advantages of this device are that the brick set or portable range or stove can at once be turned into a gas cooking or heating device with all the convenience of top stove room, direct chimney flue construction, avoidance of having both coal and gas ranges at one time in the kitchen as well as the

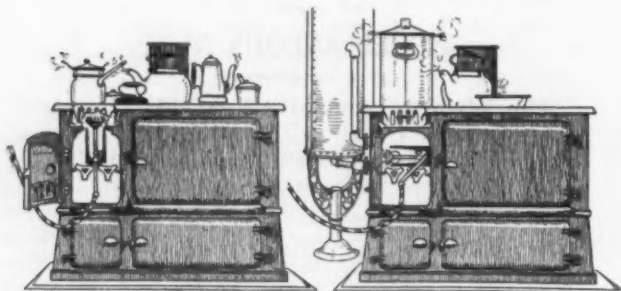


Fig. 2.—As Applied to Range Firebox.

Fig. 3.—Direct Flame Against Water Back to Heat Water in Range Boiler.

saving in cost of gas range and cost of taking down and storing it during the winter. Another point brought out is that as the heat is applied directly against the stove lids or utensils in an enclosed space the heat is conserved instead of being partly diffused in space, while superfluous heat can be sent through the dampers up chimney instead of into the room, according to the requirements of the occasion. In oven practice the company say that 500 degrees of heat can be obtained in 10 min. with the three burners, using about 12 cu. ft. an hour at an average pressure, each burner being controlled by a separate key, while 300 to 400 degrees serves for most purposes. The Kalor attachment consists of a substantial cast iron frame, japan finished, 10½ in. long over all and 5½ in. high, the bottom center tube being ¾ in. outside. The flame spreaders, 2 in. in diameter, are hinged so they can be thrown back when direct flame

winter. Fig. 1 represents the No. 1 style for corners, the dimensions of which are 17 x 17 x 10 in. Fig. 2

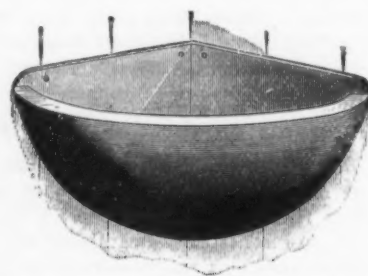


Fig. 1.—Cast Iron Horse Manger, Porcelain Enamelled Inside.

illustrates Nos. 2 and 3 square mangers, respectively 16 x 18 x 9 in. and 17 x 20 x 10 in. The inner enamel-

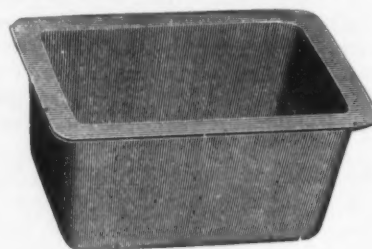


Fig. 2.—Similar Manger, Square Inside.

ing is white or porcelain finish, and the outsides can be supplied in red or black painted finishes, as requested.

### Marlin Repeating Shotguns and Rifle.

The Marlin Fire Arms Company, New Haven, Conn., has just put on the market the new Marlin repeating



Fig. 1.—Marlin Model 21, 12-Gauge, Repeating Shotgun.

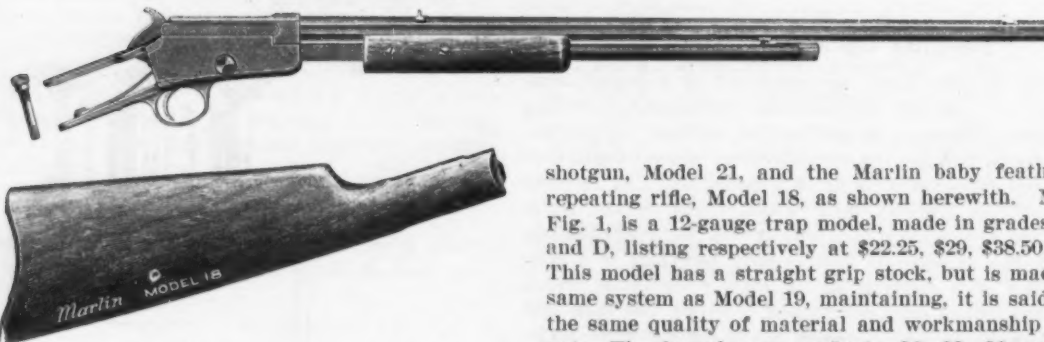


Fig. 2.—Marlin Model 18, Baby Featherweight Takedown Repeating Rifle.

for some special purpose is needed. They can also be used to heat sad irons, chafing dishes, &c.

### Enamelled Cast Iron Horse Mangers.

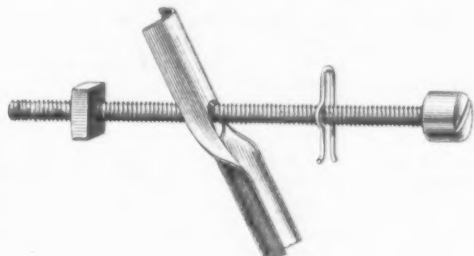
The Indiana Foundry Company, Indiana, Pa., has put on the market two new styles of enamelled cast iron horse mangers, as here illustrated. The bodies are made much heavier than the ordinary cast iron feed boxes, so as to hold permanently the inside white enameling, which is full bodied and well put on, we are advised, in the same way that bathtubs and similar articles are enamelled, thus removing the serious objection to plain or galvanized boxes, and preventing cases of sore lips and tongues in horses and other kinds of stock, especially in

shotgun, Model 21, and the Marlin baby featherweight repeating rifle, Model 18, as shown herewith. Model 21, Fig. 1, is a 12-gauge trap model, made in grades A, B, C and D, listing respectively at \$22.25, \$29, \$38.50 and \$85. This model has a straight grip stock, but is made on the same system as Model 19, maintaining, it is said, exactly the same quality of material and workmanship throughout. The barrels are made in 26, 28, 30 and 32 in. lengths in all but grade D, which is made in 26, 28 and 30 in. lengths. All are six shots, and the weights range from 6¼ to 7¼ lb. The barrels are referred to as clean, perfect tubes, with a uniform distribution of metal on all sides, allowing uniform expansion when fired and producing full, round, evenly distributed patterns. Fig. 2 illustrates the Marlin Model 18 featherweight repeating rifle. As now made this is a take down rifle, .22 caliber, using a thumbscrew for a tang screw. The rifle weighs but 3 lb. 10 oz., and is said by the maker to have all of the accuracy and effectiveness of the larger, heavier guns. To take down the thumbscrew is reversed a few turns, when the barrel and action can be lifted out and the butt stock slipped off, as shown, making it easy to pack or carry. This rifle can also be furnished with 20-in. round barrel, weight 3 lb. 11 oz., and 20-in. octagon barrel, weighing about an ounce less.



## Delta Toggle Bolt.

The G. & W. Mfg. Company, 26 Cortlandt street, New York, has just put on the market the Delta toggle bolt as here illustrated. It is made in any necessary lengths and diameters, but regularly in 3-16 in. thickness of screw, any length. The feature of this device is that when desiring to anchor fixtures of any kind to a wall or partition having an open space at the back, a hole need be drilled or cut only the greatest diameter of the square nut, when the nut end with the two-way grooved sheet steel piece is turned parallel with the bolt and pushed



Delta Toggle Bolt.

through the hole. Once through the grooved piece or brace by gravitation turns nearly upright, so that the threaded rod can be screwed to proper length when the bracket or fixture is placed in position and the slotted nut turned up tight with a screw driver. The small curved clothes pin like wire serves the temporary purpose of keeping control of the bolt, so that it cannot fall inside, by chance, before being properly fastened. These bolts are designed for many kinds of electric light fixtures, telephone cabinets, plumbers' fixtures, insulating purposes, for carpenters' use in connection with floor jambs, telegraph companies, concrete construction, &c.

## Adjustable Corn Hook, Yankee No. 95.

The Goodell Company, Antrim, N. H., with New York office in charge of G. J. Turnbull, at 10 Warren street, has just put on the market a new adjustable corn hook, as here illustrated. The novel feature of this article is the rapidity and ease with which the blade can be hung in any of three positions, as shown herewith, to meet

different conditions, as well as the marked advantage of being able to quickly remove the blade when packing for freight or express shipment, or when carrying about.



Adjustable Corn Hook, Yankee No. 95.

The turned hardwood beech handle is 1 3/4 in. in diameter and 12 1/2 in. long to end of malleable iron ferrule, the ferrule construction being such that it can be turned indefinitely without coming off. The blade of steel is ground from the upper side, as in use, and oil finished. A solid 5/8-in. iron plug is driven into the handle at right angles and then threaded to receive the 3/4-in. screw end of the malleable iron loop, which is 7 1/4 in. long over all. A few reverse turns into the plug releases the tension on the heel of the blade sufficient to remove it entirely or readjust it to a new angle.

## PAINTS, OILS AND COLORS

## Animal, Fish and Vegetable Oils—

	per gal.
Linseed, City, raw.....	33 @ 39
City, Boiled.....	39 @ 43
State and Western, raw.....	37 @ 38
Raw Calcutta Seed.....	63 @ 68
Lard, Extra Prime, Winter.....	69 @ 70
Extra No. 1.....	46 @ 47
No. 1.....	40 @ 44
Cotton-seed, Crude, f.o.b. mills.....	22 1/2 @ 23 1/2
Summer Yellow, Prime.....	36 1/2 @ 37
Summer Yellow, off grades.....	36 @ 37
Sperm, Crude.....	53 @ 54
Natural Spring.....	51 @ 52
Bleached Spring.....	51 @ 52
Natural Winter.....	63 @ 65
Bleached Winter.....	66 @ 67
Bleached Winter, Extra.....	68 @ 69
Tallow, Prime.....	51 @ 53
Whale, Crude.....	32 @ 33
Natural Winter.....	43 @ 44
Bleached Winter.....	45 @ 46
Extra Bleached Winter.....	47 @ 48
Menhaden, Brown, Strained.....	28 @ 29
Light, Strained.....	27 @ 28
Bleached, Winter.....	30 @ 31
Extra Bleached, Winter.....	31 @ 32
Southern.....	30 @ 31
Cocanut, Ceylon.....	7 1/2 @ 7 3/4
Cochin.....	8 1/4 @ 8 1/2
Cod, Domestic, Prime.....	30 @ 33
Newfoundland.....	35 @ 37
Red, Elaine.....	32 @ 34
Red, Saponified.....	32 @ 34
Olive, Italian, bbls.....	52 @ 56
Neatsfoot, Prime.....	43 @ 40
Palm, Logan.....	6 1/2 @ 6 1/2

## Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10 1/2 @ 11 1/2
29 gravity, 15 cold test.....	11 1/2 @ 12 1/2
Summer.....	10 1/2 @ 11 1/2
Cylinder, light filtered.....	18 @ 19
Dark filtered.....	16 @ 17
Paraffine, 90-97 gravity.....	13 1/2 @ 14
883 gravity.....	12 1/2 @ 13
893 gravity.....	10 1/2 @ 10 1/2
Red.....	12 1/2 @ 14

## Miscellaneous—

Barytes:	
White, Foreign.....	17.50 @ 19.00
Amer. floated.....	15.00 @ 15.50
Off color, No. 2.....	13.50 @ 15.00
Chalk, in bulk.....	3.00 @ 3.25
In bbls.....	100 lb @ 35
China Clay, English.....	11.00 @ 17.00
Cobalt, Oxide.....	100 lb @ 2.50 @ 2.60
Whiting, Common.....	100 lb @ 13 @ 14
Gilders.....	100 lb @ 50 @ 55
Ex. Gilders.....	100 lb @ 50 @ 55
Putty, Commercial—	per 100 lb
In bladders.....	1.70 @ 1.85
In bbls. or tubs.....	1.20 @ 1.40
In 1 lb to 5 lb cans.....	2.65 @ 2.95
In 12 1/2 to 50 lb cans.....	1.50 @ 1.90
Spirits Turpentine—	per gal.
In Oil bbls.....	61 @ 64 1/2
In machine bbls.....	64 1/2 @ 65
Glue—	
Cabinet.....	11 @ 15
Common Bone.....	7 @ 9
Extra White.....	15 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 10
Low Grade.....	13 @ 16
Medium White.....	14 @ 17
Gum Shellac—	
Bleached Commercial.....	45 @ 47
Bone Dried.....	55 @ 57
Button.....	40 @ 50
Diamond I.....	54 @ 55
Fine Orange.....	50 @ 52
A. C. Garnet.....	40 @ 42
G. A. L. Garnet.....	44 @ 44 1/2
O. C.....	58 @ 60
Octagon B.....	25 @ 25
T. N.....	47 1/2 @ 50
V. S. O.....	55 @ 55
Colors in Oil—	per lb
Black, Lampblack.....	12 @ 14
Rhine, Chinese.....	30 @ 32
Blue, Prussian.....	32 @ 36

Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	12 @ 16
Green, Paris.....	21 @ 24
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

## White Lead, Zinc, &amp;c.—

Lead, English white, in Oil.....	9 1/2 @ 9 3/4
Lead, American white, in Oil:	
Lots of 500 lb or over.....	7 1/4 @ 7 1/4
Lots less than 500 lb.....	7 1/4 @ 7 1/4
In Barrels.....	6 1/4 @ 6 1/4
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	1 @ 1
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	1 @ 1
Lead, White, in oil, 1 to 5 lb	
ass'ted tins, add to keg price.....	1 1/4 @ 1 1/4
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	6 1/4 @ 6 1/4
Lead, White, Dry, in bbls.....	5 1/2 @ 5 1/2
Zinc, French:	
Antwerp, Red Seal, dry.....	8 1/2 @ 8 1/2
Antwerp, Green Seal, dry.....	10 1/2 @ 10 1/2
Paris, Red Seal, dry.....	9 1/4 @ 9 1/4
Paris, Green Seal, dry.....	11 @ 11
Zinc, V. M. French, in Poppy Oil:	
Lots of 1 ton and over.....	13 1/4 @ 13 1/4
Lots of less than 1 ton.....	13 1/2 @ 13 1/2
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	11 1/2 @ 11 1/2
Lots of less than 1 ton.....	12 1/2 @ 12 1/2
Discounts—French Zinc.—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades, 1%: 25 bbls., 2%; 50 bbls., 4%.	
Dry Colors—	
Black, Carbon.....	5 @ 10
Black, Drop, American.....	4 @ 6
Black, Drop, English.....	5 @ 13

Black, Ivory.....	16 @ 20
Lamp, Com.....	1 1/2 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	29 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	4 1/2 @ 15
Brown, Spanish.....	1 1/2 @ 1
Carmine, No. 40.....	3.00 @ 3.10
Green, Chrome, ordinary.....	3 1/2 @ 6
Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	7 1/4 @ 7 1/4
Lots less than 500 lb.....	7 1/4 @ 7 1/4
Litharge, American, bbls.....	7 1/4 @ 7 1/4
Ocher, American.....	50 @ 16.00
American Golden.....	2 1/2 @ 3 1/2
French.....	1 1/4 @ 2 1/2
Foreign Golden.....	3 @ 4
Orange Mineral, English.....	10 @ 12
French.....	10 1/2 @ 12
German.....	8 1/2 @ 10
American.....	5 1/2 @ 8 1/2
Red, Indian, English.....	1 1/2 @ 8 1/2
American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	100 lb \$0.50 @ 1.25
English.....	100 lb \$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9 1/2
Italian, Raw, Powdered.....	3 @ 6 1/2
American, Raw.....	1 1/2 @ 2
American Burnt and Pow.....	1 1/2 @ 2
Talc, French.....	17.00 @ 25.00
American.....	17.00 @ 25.00
Terra Alba, French.....	9 1/2 @ 1.00
English.....	100 lb .80 @ 1.00
American.....	100 lb .75 @ .80
American.....	100 lb .75 @ .80
Umber, Turkey, Bnt. & Pow.....	2 1/2 @ 3 1/2
Turkey, Raw and Powdered.....	2 1/2 @ 3 1/2
Burnt, American.....	1 1/2 @ 2
Raw, American.....	1 1/2 @ 2
Yellow Chrome.....	12 @ 14
Vermilion, American Lead.....	10 @ 25
Quicksilver, bulk.....	65 @ 66
Quicksilver, bags.....	65 @ 66
French, Import.....	65 @ 67
Chinese.....	9.50 @ 1.00

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic,  $\frac{3}{4}$  doz. \$3.00.....33%  
North's.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....33%  
Taplin's Perfection.....33%

**Ammunition—**See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils..... $\frac{1}{2}$  lb. 1¢ @ 7¢  
Hay-Budden, Wrought..... $\frac{1}{2}$  lb. 9¢ @ 9¢  
Trenton..... $\frac{1}{2}$  lb. 9¢ @ 9¢

## Imported—

Peter Wright & Sons,  $\frac{3}{4}$  lb. 8¢ to 34¢  
lb. 11¢; 350 to 600 lb. 11¢ @ 1¢

## Anvil, Vise and Drill—

Millers Falls Co., \$15.00.....15¢ @ 10%

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Livingston Nail Co.....33%

## Augers and Bits—

Com. Double Spur.....75¢ @ 75¢  
Jennings' Patn., reg. finish.....50¢ @ 60¢

## Black Lip or Blued.....60¢ @ 10%

## Boring Mach. Augers.....70¢ @ 10%

## Car Bits, 12-in. twist.....50¢ @ 10%

## Ford's Auger and Car Bits.....40¢ @ 5%

## Forester Pat. Auger Bit.....25¢ @ 10%

## C. E. Jennings & Co.: No. 10 ext. lip, R. Jennings' list.....25¢ @ 10%

## No. 30, R. Jennings' list.....40¢ @ 7%

## Russell Jennings.....25¢ @ 10% & 2%

## L'Hommedieu Car Bits.....15¢ @ 10%

## Mayhew's Countersink Bits.....45¢ @ 10%

## Millers Falls.....50¢ @ 10%

## Pugh's Black.....20¢ @ 10%

## Pugh's Jennings' Pattern.....35¢ @ 10%

## Snell's Auger Bits.....60¢ @ 10%

## Snell's Bell Hangers' Bits.....60¢ @ 10%

## Snell's Car Bits, 12-in. twist.....60¢ @ 10%

## Wright's Jennings' Bits.....50¢ @ 10%

## Bit Stock Drills—

See Drills, Twist.

## Expansive Bits—

Clark's small, 18¢ large, 15¢.....50¢ @ 10%

Clark's Pattern, No. 1,  $\frac{3}{4}$  doz. \$36;  
No. 2, 18¢.....60¢ @ 10% & 10%

Ford's, Clark's Pattern.....60¢ @ 10%

C. E. Jennings & Co., Steer's Pat.....25¢ @ 10%

Swan's.....60¢ @ 10%

## Gimlet Bits—

Per gro.

Common Dble. Cut.....\$3.00 @ 3.25

German Pattern, No. 1 to 10,  
\$1.60; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz. \$5.50 @ 6.00

Ames.....25¢ @ 10%

Universal.....20¢ @ 10%

Wood's Universal.....25¢ @ 10%

## Ship Augers and Bits—

Ship Augers.....45¢ @ 5%

Ford's.....33¢ @ 5%

C. E. Jennings & Co.:  
L'Hommedieu's.....15¢ @ 10%

Watrous'.....33¢ @ 10%

Snell's.....40¢ @ 10%

## Awl Hafts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75 @ 3.00

Unhdded, Shldered.....gro. 63¢ @ 66¢

Unhdded, Patent.....gro. 66¢ @ 70¢

Peg Awls:  
Unhdded, Patent.....gro. 31¢ @ 34¢

Unhdded, Shldered.....gro. 65¢ @ 70¢

Scratch Awls:  
Handled, Com.....gro. \$3.50 @ 4.00

Handled, Socket.....gro. \$11.50 @ 12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

Single Bit, base weights:  
First Quality.....\$1.75 @ 5.00

Second Quality.....\$1.25 @ 4.50

Double Bit, base weights:  
First Quality.....\$7.00 @ 7.50

Second Quality.....\$6.50 @ 6.75

## Axle Grease—

See Grease, Axle

## Axles—

Concord, Loose Collar.....4¢ @ 4¢

Concord, Solid Collar.....4¢ @ 5¢

No. 1 Common, Loose.....3¢ @ 3¢

## No. 1 1/4 Com. New Style 3 1/4 @ 4 1/4

## No. 2 Solid Collar.....4¢ @ 4¢

## Half Patent.....75¢ @ 75¢

Nos. 7, 8, 11 and 12.....75¢ @ 75¢

Nos. 13 to 14.....70¢ @ 75¢

Nos. 15 to 18.....75¢ @ 75¢

Nos. 19 to 22.....75¢ @ 75¢

## Boxes, Axle—

Common and Concord, not turned  
lb., 4¢ @ 5¢

Common and Concord, turned,  
lb., 5¢ @ 6¢

Half Patent.....lb., 8¢ @ 10¢

## Bait— Fishing—

Hendryx:  
A Bait.....20%

B Bait.....25%

Competitor Bait.....20¢ @ 5%

## Balances— Sash—

Caldwell new list.....50%

Pullman.....50¢ @ 10¢ @ 60%

## Spring—

Spring Balances.....50¢ @ 10¢ @ 60%

Chatillon's:  
Light Sps. Balances.....50¢ @ 10%

Straight Balances.....40¢ @ 50%

Circular Balances.....50¢ @ 10%

Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars— Crow—

Steel Crowbars, 10 to 40 lb.,  
per lb., 3¢ @ 3¢

## Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$  gro. \$2.50

## Beams, Scale—

Scale Beams.....40¢ @ 10¢ @ 50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered  $\frac{3}{4}$  doz. \$0.85;

Tinned.....\$1.00

No. 11 Wire Coppered  $\frac{3}{4}$  doz. \$1.10;

Tinned.....\$1.20

No. 10 Wire Galvanized.....\$1.75

Western W. G. Co.:  
No. 1 Electric..... $\frac{1}{2}$  gro. \$7.80

No. 2 Buffalo..... $\frac{1}{2}$  gro. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$  gro. \$8.00

## Egg—

Holt-Lyon Co.:  
Holt, per doz. No. 1, Jap'd,  
\$1.20; No. 1, Tin'd, \$1.50; No. 2,  
B. Jap'd, \$2.00; No. 2, Tin'd,  
\$2.25.

Lyon, Jap'd, per doz. No. 2,  
\$1.25; No. 3, \$1.50.

Taplin Mfg. Co.:  
Improved Dover, per gro. No. 60,  
\$6.00; No. 75, \$6.50; No. 100, \$7.00;

No. 102, Tin'd, \$8.50; No. 150,  
Hotel, \$15.00; No. 152, Hotel  
Tin'd, \$17.00; No. 200, Tumbler,  
\$8.50; No. 202, Tumbler Tin'd,  
\$9.50; No. 300, Mammoth, per  
doz., \$25.00.

Turner & Seymour Mfg. Co.:  
No. 8, Dover.....\$6.00

Western W. G. Co., Buffalo.....\$7.00

Wonder (R. M. Co.)  $\frac{1}{2}$  gro. net, \$6.00

## Bellows—

Blacksmith, Standard List.....

60¢ @ 10¢ @ 60¢ @ 10¢ @ 5%

## Hand—

Inch.....6 7 8 9 10

Doz.....\$1.75 5.70 6.65 7.60 8.85

## Molders—

Inch.....9 10 11 12 14

Doz.....\$8.00 9.00 10.50 12.50 14.50

## Bells— Cow—

Ordinary Goods.....75¢ @ 75¢ @ 10¢ @ 5%

High grade.....70¢ @ 10¢ @ 75%

Jersey.....75¢ @ 10%

Texas Star.....50%

## Door—

Abbe's Gong.....45%

Barton Gong.....50%

Home, R. & E. Mfg. Co. S.....55¢ @ 10%

Trip Gong.....50¢ @ 10¢ @ 50¢ @ 10%

Yankee Gong.....55%

## Hand—

Hand Bells, Polished Brass.....60¢ @ 10%

White Metal.....60%

Nickel Plated.....50¢ @ 10¢ @ 60%

Swiss.....60¢ @ 60¢ @ 75%

Cone's Globe Hand Bells.....33¢ @ 35%

Silver Chime.....33¢ @ 35%

## Miscellaneous—

Farm Bells.....lb. 2¢ @ 4¢

Church and School.....50¢ @ 10¢ @ 60%

## American Tube & Stamping Co.

Groups.....10%

Table Call Belts.....50¢ @ 50¢ @ 10%

## Belting— Leather—

Extra Heavy, Short Lap.....60¢ @ 5%

Regular Short Lap.....60¢ @ 10¢ @ 5%

Standard.....70%

Light Standard.....70¢ @ 5%

Cut Leather Lacing.....50%

Leather Lacing Sides, per sq. ft.  
5¢

## Rubber—

Agricultural (Low Grade).....

75¢ @ 75¢ @ 5%

Common Standard.....70¢ @ 70¢ @ 10%

Standard.....60¢ @ 50¢ @ 10%

Extra.....60¢ @ 60¢ @ 5%

High Grade.....50¢ @ 50¢ @ 10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters,

## Tire—

Detroit Perfected Tire Bender.....40%

Detroit Stoddard's Lightning Tire  
Upsetters, No. 1, \$4.25; No. 2, \$7.25;

No. 3, \$10.50; No. 4, \$18.25; No. 5,  
\$20.50.

Green River Tire Benders and Up-  
setters.....20%

## Bicycle Goods—

John S. Leng's Son & Co.'s 1906 list:

Chain, Parts, Spokes.....50%

Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills,  
&c.—See Augers and Bits.

## Blocks— Tackle—

Common Wooden.....70¢ @ 10¢ @ 75%

Hartz St. Tackle Blocks.....50¢ @ 50¢ @ 5%

B. & L. R. Co.:  
Boston Wood Snatch, 50%; Eclipse  
Steel, 75%; Hollow Steel, 60¢ @ 10%;

Star Wire Rope, 50%; Tarbox Metal  
Snatch, 50%; Tarbox New Style  
Steel, 50¢ @ 10%; Wire Rope Snatch,  
50%;

Lane's Patent Automatic Lock and  
Junior.....30%

Stowell's Novelty, Mal. Iron.....50%

Stowell's Loading.....50¢ @ 10%

See also Machines, Hoisting.

## Boards, Stove—

Zinc, Crystal, &c.....40%

Paper Embossed.....40¢ @ 10%

## Boards, Wash—

See Washboards.

## Bobs, Plumb—

Keuffel & Esser Co.....83¢ @ 5%

## Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread):  
 $\frac{1}{2}$  & larger and smaller.....75¢ @ 5%

Larger and Longer.....65¢ @ 5%

Phila. Eagle \$3.00 list May 24, '99

Bolt Ends, list Feb. 14, '95.....

Machine,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and smaller  
65¢ @ 10¢ @ 5%

Machine, larger and longer.....

65¢ @ 10¢ @ 5%

## Door and Shutter—

Cast Iron Barrel, Japanned,  
Round Brass Knob:

Inch.....3 4 5 6 8

Per doz. \$1.30 .35 .45 .60 .80

Cast Iron Spring Foot, Jap'd:



Gautier, Blunt, 10 1/4 c; Sharp, 4 1/4 c; Perkins, Blunt, 10 1/4 c; Sharp, 4 1/4 c.

### Can Openers— See Openers, Can.

### Cans, Milk—

Illinois Pattern.....\$1.35 1.85 2.05 each.  
New York Pattern.....1.50 2.20 2.45 each.  
Baltimore Pattern.....1.50 2.20 2.45 each.  
Dubuque.....1.35 1.60 1.75 each.

### Cans, Oil—

Buffalo Family Oil Cans:  
3 18.00 5 60.00 10 gal. 129.60 gro., net.

### Caps, Percussion—

Eley's B. B. .... 58¢ @ 55¢  
G. D. .... per M 34¢ @ 35¢  
F. L. .... per M 40¢ @ 42¢  
C. L. .... per M 40¢ @ 42¢  
Musket .... per M 62¢ @ 63¢

### Primers—

Berdan Primers, \$2 per M... 80%  
B. L. Caps (Sturtevant Shells) \$2 per M... 80%  
All other primers per M \$1.52 @ 1.60

### Cartridges—

Blank Cartridges:  
32 C. F., \$5.50..... 10¢ @ 5¢  
38 C. F., \$7.00..... 10¢ @ 5¢  
22 cal. Rim, \$1.50..... 10¢ @ 5¢  
32 cal. Rim, \$2.75..... 10¢ @ 5¢  
B. B. Caps, Con. Ball, Regd. \$1.90  
B. B. Caps, Round Ball..... \$1.40  
Central Fire..... 25¢  
Target and Sporting Rifle..... 15¢ @ 5¢  
Primed Shells and Bullets..... 15¢ @ 5¢  
Rim Fire, Sporting..... 30¢  
Rim Fire, Military..... 15¢ @ 5¢

### Casters—

Bed ..... 70¢ @ 70¢ @ 10%  
Plate ..... 60¢ @ 10¢ @ 10¢ @ 10%  
Philadelphia ..... 75¢ @ 75¢ @ 10%  
Acme, Ball Bearing..... 33¢  
Boss Anti-Friction..... 70¢ @ 10%  
Gem (Roller Bearing)..... 80¢  
Martin's Patent (Phoenix)..... 45¢  
Standard Ball Bearing..... 45¢  
Tucker's Patent low list..... 50¢  
Yale (Double Wheel) low list..... 50¢

### Cattle Leaders—

See Leaders, Cattle.

### Chain, Coil—

American Coil, Straight Link:  
3-16 1/4 5-16 3/4 7-16 1/2 9-16  
\$8.70 5.90 4.95 4.20 4.05 3.95 3.90  
3/8 1/2 to 1 1 1/2 to 1 3/4 inch.  
\$3.85 3.70 3.65 3.60  
German Coil..... 60¢ @ 10¢ @ 10% @ 70%

### Halter—

Halter Chains..... 60¢ @ 5¢ @ 10%  
German Pattern Halter Chains,  
list July 21, '97..... 60¢ @ 10¢ @ 10%  
Covert Mfg. Co..... 35¢ @ 5%

### Cow Ties—

See Halters and Ties.

### Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.  
6 1/2-6-3, Straight, with ring \$25.00  
6 1/2-6-2, Straight, with ring \$25.00  
6 1/2-8-2, Straight, with ring \$30.00  
6 1/2-10-2, Straight, with ring \$35.00  
NOTE—Add 2c per pair for Hooks.  
Twist Traces: add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 4, 4c to price of Straight Link.

Eastern Standard Traces, Wag-  
on Chain, &c..... 60¢ @ 10%

### Miscellaneous—

Jack Chain, list July 10, '93:  
Iron ..... 60¢ @ 10%  
Brass ..... 60¢ @ 10%  
Safety Chain..... 70¢ @ 10%  
Gal. Pump Chain..... 1/4 @ 4 1/2 c  
Covert Mfg. Co.:  
Bread, Halter, Heel, Rein, Stal-  
lion Community..... 40%  
Onida Community:  
Am. Dog Leads and Kennel Chains,  
40¢ @ 40¢ @ 5%  
Niagara Dog Leads and Kennel  
Chains..... 45¢ @ 60¢ @ 5%  
Wire Goods Co.:  
Dog Chain..... 70¢ @ 10%  
Universal Dbl.-Jointed Chain..... 50%

### Chain and Ribbon, Sash—

Onida Community:  
Copper Chain, 60¢ @ 5%; Steel Chain,  
60%  
Pullman:  
Bronze Chain, 60%; Steel Chain,  
60¢ @ 10%  
Sash Chain Attachments, per set, 3¢  
Aluminum Sash Ribbon, per 100  
ft..... \$1.25 @ 33.00  
Sash Ribbon Attachments, per set, 3¢

### Chalk—(From Jobbers.)

Carpenters' Blue..... gro., 40¢ @ c  
Carpenters' Red..... gro., 35¢ @ c  
Carpenters' White..... gro., 30¢ @ c  
See also Crayons.

### Checks, Door—

Barley's..... 45%  
Pullman, per gro..... 35¢ @ 40%  
Russwin..... 40%

### Chests, Tool—

American Tool Chest Co.:  
Boys' Chests, with Tools..... 55%  
Youths' Chests, with Tools..... 40%  
Gentlemen's Chests, with Tools..... 30%  
Farmers', Carpenters', etc., Chests,  
with Tools..... 20%

Machinists' and Pipe Fitters'  
Chests, Empty..... 50%  
Tool Cabinets..... 50%  
C. E. Jennings & Co.'s Machinists'  
Tool Chests..... 33¢ @ 10%

### Chisels—

Socket Framing and Firmer  
Standard List..... 75¢ @ 10¢ @ 75¢ @ 10¢ @ 5%  
Ruck Bros..... 30%  
Charles Ruck Edge Tool Co..... 30%  
C. E. Jennings & Co.:  
Socket Firmer No. 10..... 60%  
Socket Framing No. 15..... 60%  
Swan's..... 75%  
L. & I. J. White Co..... 30¢ @ 30¢ @ 5%

### Tanged—

Tanged Firmers..... 33 1/3-34¢ @ 40%  
Ruck Bros..... 30%  
Charles Ruck Edge Tool Co..... 30%  
L. & I. J. White Co..... 25¢ @ 5%

### Cold—

Cold Chisels, good quality, 13¢ @ 15¢  
Cold Chisels, fair quality, 11¢ @ 12¢  
Cold Chisels, ordinary..... 9¢ @ 10¢

### Chucks—

Almond Drill Chucks..... 35%  
Almond Turret Six-Tool Chucks..... 35%  
Each Pat., each \$8.00..... 35¢ @ 5%  
Empire..... 25%  
Blacksmiths'..... 25%  
Jacobs' Drill Chucks..... 35%  
Pratt's Positive Drive..... 25%  
Skinner Patent Chucks..... 40¢ @ 10%  
Independent Lathe Chucks..... 40¢ @ 10%  
Universal, Reversible Jaws..... 40%  
Combination, Reversible Jaws..... 40%  
Drill Chucks, New Model..... 25%  
Standard, 40¢ @ 10%; Skinner Pat.  
25%; Positive Drive..... 35%  
Planer Chucks..... 30%  
Face Plate Jaws..... 40¢ @ 10%  
Standard Tool Co.:  
Improved Drill Chuck..... 45%  
Union Mfg. Co.:  
Combination, Nos. 1, 2, 3, 4, 5, 6,  
7, 8 and 11, 40%; No. 21..... 35%  
Scroll Combination, Nos. 32 and  
34..... 30%  
Geared Scroll, Nos. 33, 34 and 35..... 30%  
Independent Iron, Nos. 18 and 318..... 40%  
Independent Steel, No. 61..... 30%  
Union Czar Drill, Nos. 000, 101,  
103..... 35%  
Universal 11, 12, 16, 17, 13, 14, 15..... 40%  
Universal, No. 42..... 35%  
Iron Face Plate Jaws, Nos. 28, 30,  
48 and 50..... 40%  
Steel Face Plate Jaws, Nos. 70 and  
72..... 35%  
Westcott Patent Chucks:  
Lathe Chucks..... 50%  
Little Giant Auxiliary Drill..... 50%  
Little Giant Double Grip Drill..... 50%  
Little Giant Drill, Improved..... 50%  
Onida Drill..... 50%  
Scroll Combination Lathe..... 50%

### Clamps—

Adjustable, Hammers..... 20¢ @ 20¢ @ 5%  
Carriage Makers', P. S. & W.  
Co..... 40¢ @ 10¢ @ 20%  
Besly, Parallel..... 33¢ @ 10%  
Lineman's, Utica Drop Forge & Tool Co.  
Wood Workers, Hammers..... 40¢ @ 10%  
Saw Clamps, see Vises, Saw Filers

### Cleaners, Drain—

Iwan's Champion, Adjustable..... 55%  
Iwan's Champion, Stationary..... 45%

### Sidewalk—

Star Socket, All Steel..... 30 doz. \$4.05 net  
Star Shank, All Steel..... 30 doz. \$3.24 net  
W. & C. Shank, All Steel..... 30 doz.  
7 1/4 in., \$3.00; 8 in., \$3.25.

### Cleavers, Butchers'—

Foster Bros..... 30%  
Fayette R. Plumb..... 30%  
L. & I. J. White Co..... 30%

### Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:  
'98 Chicago Horse, each..... \$8.75  
1902 Chicago Horse, each..... \$10.75  
20th Century Horse, each..... \$5.00  
Lightning Belt Horse, each..... \$15.00  
Chicago Belt Horse, each..... \$20.00  
Stewart's Enclosed Gear  
Horse, each..... \$8.75  
Stewart's Patent Sheep Shear-  
ing Machine, each..... \$12.75

### Clips, Axle—

Regular Styles, list July 1, '05 80%

### Cloth and Netting, Wire—

See Wire, &c.

### Cocks, Brass—

Hardware list:  
Plain Bibbs, Globe, Kerosene,  
Racking, Liquor, Bottling,  
&c..... 70%  
Compression Bibbs..... 65¢ @ 10%

### Coffee Mills—

See Mills, Coffee.

### Collars, Dog—

Nickel Chain, Walter B. Stevens &  
Son's list..... 40%  
Leather, Walter B. Stevens & Son's  
list..... 40%

### Combs, Curry—

Metal Stamping Co..... 40%

### Compasses, Dividers, &c.

Ordinary Goods..... 70¢ @ 10¢ @ 75%  
Bemis & Call Hdw. & Tool Co.:  
Dividers..... 65%  
Callipers, Double, 65%; Inside or  
Outside..... 65%  
Callipers, Wm..... 60%  
Compasses..... 50%  
Wm. Schollhorn Co.:  
Excelsior Dividers..... 80%  
Lodi Dividers..... 75%

### Conductor Pipe,—

L. C. L. to Dealers:  
Territory: Galvanized  
Galv. Charcoal Copper.  
Steel. Iron. 1 1/4, 1 1/2 @ 20 oz.  
Eastern: 60¢ @ 30% 60¢ @ 21 1/2% 40¢ @ 10%  
Central: 70% 55¢ @ 71 1/2% 40¢ @ 71 1/2%  
Western and Southern: 65¢ @ 10% 55¢ @ 21 1/2% 40¢ @ 5%  
So. Western: 62 1/2¢ @ 71 1/2% 50¢ @ 5% 40¢ @ 21 1/2%  
Terms, 60 days; 2% cash 10 days. Fac-  
tory shipments generally delivered.  
See also Eave Troughs.

### Coolers, Water—

Gal, each..... 1 2 3 4 6 8  
Lalador..... \$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Gal..... \$1.20 \$1.50 \$1.80 \$2.10 \$2.70  
Ice land, ea..... \$1.80 \$2.10 \$2.40 \$3.00  
Gal..... 2 3 4 6 8  
Galvanized, ea..... \$1.55 \$2.00 \$2.25 \$2.90 \$3.90  
Galvanized, Lined, side handles,  
Gal..... 3 4 6 8  
Each..... \$1.95 \$2.15 \$2.40 \$3.30 \$4.15  
White Enameled, 25%; Agate Lined, 25%

### Coopers' Tools—

See Tools, Coopers'.

### Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair  
and heavier, 23¢ @ 24¢; lighter  
than 3 lbs. to pair..... 25¢ @ 26¢

### Cord—Sash—

Braided, Drab..... 1b. 35¢  
Braided, White, Com., Nos. 8  
to 12, 2 1/2¢; No. 7, 2 1/4¢; No. 6,  
2 1/2¢.

### Cable Laid Italian—

lb., A, 18¢; B, 16¢  
Common India..... 1b. 10¢ @ 10¢ @ 4¢  
Cotton Sash Cord, Twisted, 17¢ @ 19¢  
Patent Russia..... 1b. 14¢ @ 14¢  
Cable Laid Russia..... 1b. 15¢ @ 15¢  
India Hemp, Braided..... 1b. 18¢ @ 18¢  
India Hemp, Twisted..... 1b. 12¢ @ 13¢  
Patent India, Twisted, 1b. 12¢ @ 13¢  
Aniston Cordage Co.:  
Braided, Nos. 8 to 12, 20¢; No. 7,  
20¢; No. 6, 20¢; 25¢; 30¢ doz., 50 ft.  
Oriole, 20¢; 50 ft., Columbia, 80¢;  
50 ft., Victoria, 100¢; 50 ft., 6-Thread,  
110¢; 60 ft., 3-Thread, 90¢; 50 ft.,  
Manila, 110¢; 60 ft., Jute, 80¢.  
Pearl Braided, cotton, No. 5, 3¢ lb.  
25¢; No. 7, 25¢; Nos. 8 to 12, 24¢  
Eddystone Braided, Nos. 8, 9 and  
10, 25¢; 7, 25¢; 6, 20¢.  
Harmony Cable Laid Italian, Nos. 7  
to 10..... 1b. 23¢  
Fulman:  
Wire Sash Cord..... 10%  
Sash Cord Attachments, per doz. 10¢  
Samson, Nos. 8 to 12:  
Braided, per lb. Drab Cotton,  
40¢; Italian Hemp, 40¢; Linen,  
55¢; White Cotton or Spot..... 35¢  
Massachusetts, White..... 35¢  
Massachusetts, Drab..... 35¢  
Phoenix, White, Nos. 8 to 12, 27¢;  
No. 7, 27¢; No. 6, 28¢.  
Silver Lake, per lb.:  
A, Drab, 45¢; A, White, 40¢;  
B, Drab, 40¢; B, White, 35¢;  
Italian Hemp, 40¢; Linen, 57¢.  
See also Chain and Ribbon.

### Wire, Picture—

List July 10, 1906..... 85¢ @ 10¢ @ 10¢ @  
Hendryx Standard Wire Picture Cord,  
old list, 85¢ @ 10%

### Cradles—

Grain..... 40¢ @ 12 1/2%

### Crayons—

White Round Crayons, Cases, 100  
gro., \$6.50 @ \$7.50 at factory, but  
lower prices made by jobbers  
Zelnicke's Lumber:  
White and Purple, Indelible,  
Blue, Red, Green, Yellow and  
Terra Cotta..... 30 doz. \$6.50  
Black..... 30 doz. \$4.00  
See also Chalk.

### Crooks, Shepherds'—

Fort Madison, per doz., Heavy, \$7.00;  
Light..... \$6.50

### Crow Bars—See Bars, Crow.

### Cultivators—

Victor Garden..... 50%

### Cutlery, Table—

International Silver Company:  
No. 12 M'd'm Knives, 1847, 30 doz. \$3.50  
Star, Eagle, Rogers & Hamilton  
and Anchor..... 30 doz. \$3.00  
Wm. Rogers & Son..... 30 doz. \$2.50

### Cutters—Glass—

H. H. Mayhew Co..... 40%  
Red Devil..... 50%  
Smith & Hemenway Co..... 40%  
Woodward..... 40%

### Meat and Food—

American..... 30%  
Nos. 1 2 3 4 5  
Each..... \$5 \$7 \$10 \$25 \$50 \$60  
Enterprise:  
Nos. 5 10 12 22 32  
Each..... \$2 \$3 \$7.25 \$1.50 \$6.25 @ 25¢ @ 7 1/2%  
No. 202, \$1.50..... 40¢ @ 7 1/2%  
Dixon's..... 30 doz. 40¢ @ 5%  
Nos. 1 2 3 4  
\$14.00 \$17.00 \$19.00 \$30.00  
Ideal..... 40¢ @ 10¢ @ 50%  
Little Giant..... 30 doz. 40¢ @ 50%  
Nos. 305 310 312 320 322  
\$35.00 \$48.00 \$14.00 \$72.00 \$60.00  
N. E. Food Choppers..... 25%  
New Triumph No. 605, 30 doz. \$24.00,  
40¢ @ 50%  
Russwin Food, No. 1, \$24.00; No. 2,  
\$27.00..... 45¢ @ 10¢ @ 50%  
Woodruff's..... 30 doz. 40¢ @ 50%  
Nos. 1 2 3 4 5  
\$15.00 \$18.00 \$18.00  
Enterprise Beef Shavers..... 25¢ @ 30%

### Slaw and Kraut—

Henry Dinston & Sons:  
Slaw and Kraut Cutters, Corn  
Graters, &c..... 35%  
J. M. Mast Mfg. Co.:  
Slaw Cutters, 1 Knife..... 30 doz. \$3.00  
Combined Slaw Cutter and Corn  
Grater..... 30 doz. \$4.00  
Tucker & Dorsey Mfg. Co.:  
Kraut Cutters..... 40%  
Slaw Cutters, 1 Knife..... 30 gr. \$18.00  
Slaw Cutters, 2 Knife..... 30 gr. \$22.00

### Tobacco—

All Iron, Cheap..... doz. \$4.25 @ \$1.50  
Enterprise..... 25¢ @ 30%  
National, 30 doz., No. 1, \$21; No. 2,  
\$18..... 40%

### Diggers, Post Hole, &c.—

Dalbey Post Hole Auger..... per doz., \$9.00  
Dinston's:  
Rapid, 30 doz., \$24.00..... 25%  
Samson, 30 doz., \$34.00..... 25%  
Iwan's Improved Post Hole Auger..... 40%  
Vaughan Pattern Post Hole Augers,  
30 doz., \$6.25  
Perfection Post Hole Diggers, 30  
doz., \$8.25  
Split Handle Post Hole Diggers,  
30 doz., \$8.25  
Kohler's, 30 doz., Universal, \$14.00;  
Little Giant, \$12.00; Hercules,  
\$10.00; Invincible, \$9.00; Rival,  
\$8.00; Pioneer..... 70%  
Never-Break Post Hole Diggers, 30  
doz., \$24.00..... 60%

### Dividers—See Compasses.

### Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 30  
doz., \$18; No. 2, \$15; No. 3, \$12;  
No. 4, \$18.

### Drawing Knives—

See Knives, Drawing.

### Dressers, Emery Wheel—

Diamond Emery Wheel Dressers..... 35%  
Diamond Wheel Dresser Cutters..... 35%

### Drills and Drill Stocks—

Common Blacksmiths' Drill,  
each..... \$1.50 @ \$1.75  
Breast, Millers Falls..... 40%  
Breast, P. S. & W..... 40%  
Goodell Automatic Drills, 40¢ @ 40¢ @ 10%  
Johnson's Automatic Drills, Nos. 2  
and 3..... 16%  
Johnson's Drill Point..... 16%  
Millers Falls Automatic Drills, 35¢ @ 10%  
Ratchet, Curtis & Curtis..... 25%  
Ratchet, Parker's, 40%; Weston's, 40%  
Ratchet, Weston's, Style H Im-  
proved..... 40%  
Ratchet, No. 012..... 40%  
Ratchet, Whitney's, P. S. & W. 30%  
Whitney's Hand Drill, No. 1, \$10.00;  
Adjustable, No. 10, \$12.00..... 33 1/2%

### Twist Drills—

Bit Stock..... 60¢ @ 10¢ @ 10% @ 70%  
Taper and Straight Shank..... 60¢ @ 10¢ @ 10¢ @ 5%

### Drivers, Screw—

Screw Driver Bits, per doz. 45¢ @ 50¢  
Balsey's Screw Holder and Driver, 30  
doz., 2 1/2-in., 46; 4-in., \$7.50; 6-in.,  
\$9..... 50%  
Buck Bros' Screw Driver Bits..... 30%  
Champion..... 50%  
Dinston's..... 50%  
Edison..... 60%  
Fray's Hol. H'dle Sets, No. 3, \$12.50;  
Ford's Brace Screw Drivers..... 40¢ @ 10%  
Gay's Double Action Ratchet..... 35%  
Goodell's Auto. 50¢ @ 10¢ @ 50¢ @ 10¢ @ 5%  
Hurwood..... 40%  
Mayhew's Black Handle..... 40%  
Mayhew's Monarch..... 40¢ @ 10%  
Millers Falls, Nos. 20 and 21..... 40¢ @ 10%  
Millers Falls, Nos. 11, 12, 41, 42, 15¢ @ 10%  
New England Specialty Co..... 50¢ @ 10%  
Smith & Hemenway Co..... 40¢ @ 5%  
H. D. Smith & Co.'s Perfect H'dle, 40%  
Stanley R. & L. Co.'s:  
No. 61, Varn. Handles, 65%; No.  
86, 75%; Victor, 55%; Defiance, 70%  
Swan's:  
Nos. 7565 to 7568, 50%; No. 7540,  
40¢ @ 10%

### Eave rough, Galvanized—

Territory: L. C. L. Galvanized  
Galv. Charcoal Copper.  
Steel. Iron. 1 1/4, 1 1/2 @ 20 oz.

### Eastern: 80% 70¢ @ 5% 40¢ @ 10%

### Central: 75¢ @ 10¢ @ 7 1/2% 70% 40¢ @ 7 1/2%

### Western and Southern: 70¢ @ 20¢ @ 7 1/2% 60¢ @ 15¢ @ 2 1/2% 40¢ @ 5%

### So. Western: 70¢ @ 20% 65¢ @ 21 1/2% 40¢ @ 21 1/2%

Terms, 2% for cash. Factory ship-  
ments generally delivered.  
See also Conductor Pipe and Elbows

### Elbows and Shoes—

Factory shipments, all territories:  
Galv. Steel and Galv. C. I.  
Standard Gauge..... 60¢ @ 10%

### No. 25..... 30% 25% 25%

### No. 21..... 30% 25% 25%

### No. 22..... 30% 25% 25%

### Copper..... 30% 25% 25%

### Elbows, Steam Pipe—

Dover, one piece (R. M. Co.)..... 40%  
Perfect Elbows..... 40%

**Extractors, Lemon Juice****Fasteners, Blind—**  
—See Squeezers, Lemon.

Zimmerman's ..... 50¢@10¢  
Walling's ..... 40¢@10¢

**Cord and Weight—**

Ives ..... 33 1/4%

**Faucets—**

Cork Lined ..... 50¢@50¢@10¢  
Metallic Key, Leather Lined..... 60¢@10¢@70¢

Red Cedar ..... 40¢@10¢@50¢  
Petroleum ..... 70¢@10¢@75¢

B. & L. B. Co.:  
Metal Key ..... 60¢@10¢  
Star ..... 60¢

West Lock ..... 50¢@10¢  
John Sommer's Peerless Tin Key..... 50¢

John Sommer's Victor M. Key..... 50¢@10¢  
John Sommer's Duplex Metal Key..... 60¢

John Sommer's Diamond Lock..... 40¢  
John Sommer's I. X. L. Cork Lined..... 50¢

John Sommer's Reliable Cork Lined..... 50¢  
John Sommer's Chicago Cork Lined..... 60¢

John Sommer's O. K. Cork Lined..... 50¢  
John Sommer's No Brand, Cedar..... 50¢

John Sommer's Perfection, Cedar..... 40¢  
McKenna, Brass:

Burglar Proof, N. P. ..... 25¢  
Improved, 1/4 and 1/2 inch..... 25¢

Self Measuring:  
Enterprise, 3/4 doz. \$36.00..... 40¢@10¢

Lane's, 3/4 doz. \$36.00..... 40¢@10¢  
National Measuring, 3/4 doz. \$36.00..... 40¢@10¢

**Felloe Plates—**

—See Plates, Felloe.

**Files— Domestic—**

List revised Nov. 1, 1899.  
Best Brands ..... 70¢@10¢@75¢@10¢

Standard Brands..... 75¢@10¢@75¢@10¢  
Lower Grade..... 75¢@10¢@80¢@10¢

Imported—  
Stubs' Tapers, Stubs' List, July 24, '97..... 33 1/3-34¢@10¢

**Fixtures, Fire Door—**

Richards Mfg. Co.:  
Universal, No. 103; Special, No. 104..... \$3.75

Fusible Links, No. 96..... 50¢  
Expansion Bolts, No. 107..... 60¢@10¢

**Grindstone—**

Net Prices:  
Inch ..... 15 17 19 21

Per doz. .... \$3.25 3.75 4.25 4.75  
P. S. & W. Co. .... 30¢@10¢@40¢

Reading Hardware Co. .... 60¢  
Stowell's Giant Grindstone Hanger..... 3/4 doz. \$6.00

Stowell's Grindstone Fixtures, Extra Heavy, 50¢@10¢@10¢; Light..... 60¢@10¢

**Fodder Squeezers—**

—See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 2, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ezy Potato..... 60¢@10¢  
Victor, Hay..... 60¢@15¢@2 1/2%

Victor, Manure..... 60¢  
Victor, Header..... 60¢

Champion, Hay..... 60¢@20¢  
Champion, Header..... 60¢

Champion, Manure..... 60¢@15¢@2 1/2%

Columbia, Hay..... 60¢@20¢  
Columbia, Manure..... 70¢

Columbia, Spading..... 70¢@15¢  
Hawkeye Wood Barley..... 60¢

W. & C. Potato Digger..... 60¢@10¢  
Acme Hay..... 60¢@20¢

Acme Manure, 4 line..... 60¢@10¢@5¢  
Champion, Hay..... 60¢@20¢

Dakota Header..... 60¢@20¢  
Jackson Steel Barley..... 60¢@20¢

Kansas Header..... 60¢@20¢  
W. & C. Favorite Wood Barley..... 40¢

Plated.—See Spoons.

**Frames— Saw—**

White, 8'x1 Bar, per doz. 75¢@80¢  
Red, 8'x1 Bar, per doz. \$1.00@1.25

Red, Dbl. Brace, per doz. \$1.40@1.50

**Freezers, Ice Cream—**

Qt. .... 1 2 3 4 6

Each ..... \$1.50 \$1.60 \$1.90 \$2.20 \$2.80

**Fruit and Jelly Presses—**

—See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp ..... \$2.75  
Cotton ..... 3.20

Waterproof Sgl. Taped..... 3.65  
Waterproof Dbl. Taped..... 4.40

Waterproof Tpl. Taped..... 5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern..... 80¢@10¢

**Gauges—**

Marking, Mortise, &c. 50¢@50¢@10¢  
Chapin-Stephens Co.:  
Marking, Mortise, &c. .... 50¢@50¢@10¢

Scholl's Patent..... 50¢@10¢@50¢@10¢  
Door Hangers..... 50¢@50¢@10¢

Diston's Marking, Mortise, &c. 67 1/2%  
Stanley R. & L. Co.'s Butt and Rabbit Gauge..... 35¢

Marking and Mortise..... 60¢  
Wire, Brown & Sharpe's..... 25¢  
Wire, Morse's..... 25¢  
Wire, P. S. & W. Co..... 33 1/4%

**Gimlets— Single Cut—**

Numbered assortments, per gro.

Nail, Metal, No. 1, \$2.00; 2, \$2.30

Spike, Metal, No. 1, \$4.00; 2, \$4.30

Nail, Wood Handled, No. 1, \$2.30; 2, \$2.60

Spike, Wood Handled, No. 1, \$4.30; 2, \$4.60

**Glass, American Window**

—See Trade Report.

**Glasses, Level—**

Chapin-Stephens Co..... 60¢@60¢@10¢

**Glue, Liquid Fish—**

Bottles or Cans, with Brush..... 25¢@10¢@50%

International Glue Co. (Martin's)..... 40%

**Grease, Axle—**

Common Grade..... gro. \$4.50@6.00

Dixon's Everlasting, 10-lb pails, ea. \$5; in boxes, 3/4 doz., 1 lb. \$1.20;

2 lb. \$2.00  
Helmet Hard Oil..... 25%

**Griddles, Soapstone—**

Pike Mfg. Co..... 33 1/4¢@33 1/4¢@10%

**Grindstones—**

Bicycle Emery Grinder..... \$6.50

Bicycle Grindstones, each..... \$2.50@3.00

Pike Mfg. Co.:  
Improved Family Grindstones, per inch, 3/4 doz..... \$2.00

Pike Mower and Tool Grinder, each..... \$3.00

**Grips, Nipple—**

Perfect Nipple Grips..... 40¢@10¢@2%

**Halters and Ties—**

Cow Ties..... 60¢@10¢@60¢@10¢@5%

Covert Mfg. Co.:  
Web ..... 45%

Jute Rope..... 45%

Sisal Rope..... 35%

Cotton Rope..... 45%

Hemp Rope..... 45%

Oneida Community:  
Am. Coll and Halters..... 40¢@10¢@5%

Am. Cow Ties..... 45¢@50%

Niagara Coll and Halters..... 45¢@50¢@5%

Niagara Cow Ties..... 45¢@50¢@10¢@5%

**Hammers—****Handled Hammers—**

Heller's Machinists'..... 40¢@10¢@40¢@10¢@10%

Heller's Farmers'..... 40¢@10¢@40¢@10¢@10%

Magnetic Tack, Nos. 1, 2, 3, \$1.25; \$1.50, \$1.75..... 50%

Peck, Stow & Wilcox, Steel..... 50%

Fayette R. Plumb:  
Plumb, A. E. Nail..... 33 1/4¢@33 1/4¢@10¢@7 1/2%

Engineers' and B. S. Hand..... 50¢@7 1/2¢@50¢@10¢@10¢@5%

Machinists' Hammers..... 50¢@50¢@10¢@5%

Riveting and Timmer..... 40¢@2 1/2¢@40¢@10¢@2 1/2%

**Heavy Hammers and Sledges—**

Under 3 lb., per lb., 50¢..... 80¢@10%

3 to 5 lb., per lb., 40¢..... 80¢@10%

Over 5 lb., per lb., 30¢..... 80¢@10%

Wilkinson's Smiths'..... lb. 9¢@10¢

**Handles—****Agricultural Tool Handles**

Axe, Pick, &c..... 60¢@10¢@60¢@10¢@5%

Hoe, Rake, &c..... 45¢@50%

Fork, Shovel, Spade, &c.:  
Long Handles..... 45¢@50%

D Handles..... 50¢@50¢@5%

**Cross-Cut Saw Handles—**

Atkins'..... 40%

Champion..... 50%

Disston's..... 50%

**Mechanics' Tool Handles—**

Auger, assorted..... gro. \$2.50@3.00

Brad Awt. .... gro. \$1.65@1.75

Chisel Handles, Ass'd, per gro.:  
Tanged Firmer, Apple, \$2.40@

\$2.65; Hickory..... \$2.15@2.40

Socket Firming, Apple, \$1.75@

\$1.95; Hickory..... \$1.45@1.60

Socket Framing, Hickory, \$1.60@1.75

File, assorted..... gro. \$1.30@1.40

Liammer, Hatchet, &c. .... 60¢@10¢@60¢@10¢@5%

Hand Saw, Varished, doz. 80¢@85¢; Not Varished..... 65¢@75¢

Plane Handles:  
Jack, doz. 30¢; Jack, Bolted..... 75¢

Fore, doz. 45¢; Fore, Bolted..... 90¢

Chapin-Stephens Co.:  
Carring Tool..... 40¢@40¢@10%

Chisel ..... 65¢@65¢@10%

File and Awl..... 65¢@65¢@10%

Saw and Plane..... 40¢@40¢@10%

Screw Driver..... 40¢@40¢@10%

Millers Falls Adj. and Ratchet Auger Handles..... 15¢@10%

Nicholson Simplicity File Handle..... 3/4 gro. \$0.85@1.50

**Hangers—**

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Atkins Mfg. Co.:  
Reliable, No. 1; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door..... 50%

**Chicago Spring Butt Co.:—**

Friction ..... 25%

Oscillating ..... 25%

Big Twin..... 25%

Chisholm & Moore Mfg. Co.:  
Baggage Car Door..... 50%

Elevator ..... 30%

Railroad ..... 30%

Cronk & Crier Mfg. Co.:  
Loose Axle..... 60¢@10%

Roller Bearing..... 70%

Griffin Mfg. Co.:  
Solid Axle, No. 10, \$12.00..... 70%

Roller Bearing, No. 11, \$15.00, 70%

Roller Bearing, Ex. Hy., No. 22, \$18.00..... 70%

Hinged Hangers, \$16.00..... 60¢@10%

Lane Bros. Co.:  
Parlor, Ball Bearing, \$4.00; Standard, \$3.15; No. 105, \$2.85; New Model, \$2.80; New Champion..... \$2.25

Barn Door, Standard..... 60¢@5%

Hinged..... net 30¢@10%

Covered..... 60¢@2%

Special..... 70¢@5%

Lawrence Bros.:  
Advance and Sterling..... 60¢@10%

Cleveland and Peerless..... 75%

Clipper, No. 75..... 60%

Crown..... 60¢@10%

Easy Parlor Door, Dbl. Sets, \$2.50; Single Sets, \$1.25..... 60¢@5%

Giant..... 60¢@5%

Hummer..... 60¢@10%

New York..... 60¢@10%

McKinney Mfg. Co.:  
No. 1, Special, \$15..... 60¢@10%

No. 2, Standard, \$18..... 60¢@10%

Hinged Hangers, \$16..... 50%

Meyers' Stayon Hangers..... 60¢@5%

Richards Mfg. Co.:  
Hangers, Nos. 47, 48, 147, 247, 60¢@5%

Pioneer Wood Track No. 3, \$2.00

Ball B'r'g St'l Track No. 10, 50¢@10%

Roller B'r'g St'l Track No. 12, \$2.15

Roller B'r'g St'l Track No. 13, \$2.30

Roller B'r'g, Nos. 30, 41, 70¢@10%

Hero, Adj. Track No. 19, 50¢@10%

Adjustable Track Tandem Trolley Track No. 16..... 50¢@10%

Seal, Steel Track No. 8..... \$2.25

Auto Adj. Track No. 22, 50¢@10%

Trolley, B. I. No. 17, \$1.25; F. D. No. 130, \$2.10..... \$2.25

Safety Underwriters F. D. No. 101..... 50%

Tandem No. 44, 2 1/2 and 3 60¢@10%

Palace, Adjustable Track No. 122..... 50¢@10%

Royal, Adjustable Track No. 122..... 50¢@10%

Ives' Wood Track No. 1..... \$2.00

Trolley B. D. No. 20..... 50¢@10%

Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28..... \$1.60

Roller Bearings, Nos. 37, 38, 39, 41, 42, 43, Sizes 1 and 2, 70¢@10%

Anti-friction, No. 42, No. 43, sizes 2 1/2 and 3..... 60¢@10%

Hinged Tandem No. 48..... 60¢@5%

Folding Door B. B. Swivel No. 135..... 40%

Stowell Mfg. & Foundry Co.:  
Acme Parlor Ball Bearing..... 40%

Alax Hinge Door..... 60%

Apex Parlor Door..... 50¢@10¢@5%

Atlas, 60%; Freight Car Door..... 60%

Baggage Car Door..... 50%

Climax Anti-Friction..... 50¢@10%

Elevator..... 40%

Express..... 50%

Interstate..... 60¢@10%

Lundy Parlor Door..... 50¢@10%

Magic, 60%; Rex Hinge Door..... 60%

Matchless..... 60¢@10%

Nansen..... 70¢@5%

Parlor Door, 50¢@10%; Railroad, 50¢@10%

Street Car Door..... 50%

Steel, No. 300, 404, 500..... 50¢@10%

Underwriters' Fire Door..... 40%



**Screw Hook and Strap.** { 6 to 12 in. lb. 3¢  
14 to 20 in. lb. 3½¢  
22 to 36 in. lb. 3½¢

**Screw Hook and Eye:**  
¾ to 1 inch. lb. 6½¢  
1½-inch. lb. 7½¢  
2-inch. lb. 8½¢

**Hitchers, Stall—**  
Covert Mfg. Co., Stall Hitchers. 30&2%  
**Hods— Coal—**

**Per doz.**  
Inch. 15 16 17 18  
Galv. Open. \$2.50 2.75 3.00 3.25  
Jap. Open. \$1.90 2.10 2.25 2.55  
Galv. Funnel. \$3.00 3.30 3.60 3.90  
Jap. Funnel. \$2.45 2.65 2.85 3.30

**Masons' Etc.—**  
Cleveland Wire Spring Co.:  
Steel Brick, No. 162. each \$0.25  
Steel Mortar, No. 158. each \$1.25

**Hoes— Eye—**  
Scovill and Oval Pattern. 60&10@60&10&10%  
Grub, Hat Feb. 23, 1899. 70&10@75&10%  
D. & H. Scovill. 30%

**Handled—**  
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.  
Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25  
Pt. Madison Cotton Hoe. 70&10&10%  
Pt. Madison Crescent Cultivator Hoe. 70&10&10%  
Pt. Madison Mattock Hoe. 70&10&10%  
Regular Weight. doz. 60%  
Junior Size. doz. \$4.00  
Pt. Madison Sprouting Hoe. doz. 50%  
Pt. Madison Dixie Tobacco Hoe. 75&10&10%  
Kretzinger's Cut Easy. 70&10&10%  
W. & C. Ivanhoe. 75&10&10%  
B. B. 6 in. Cultivator Hoe. \$3.15  
B. B. 6½ in. Cultivator Hoe. \$3.35  
Acme Weeding. doz. net, \$4.35  
W. & C. L'ning Shovel Hoe. doz. \$4.85

**Hoisting Apparatus—**  
See Machines, Hoisting.

**Holders— Bit—**  
Angular. doz. \$24.00. 45&10%  
**Door—**

Bardsley's. 45%  
Empire. 50%  
Pulman. 50%  
Superior. 33%&10%

**File and Tool—**  
Nicholson File Holders and File Handles. 33%&40%

**Fruit Jar—**  
Triumph Fruit Jar Holder, doz. gross, \$10.80; doz. \$1.25

**Hones—Razor—**  
Pike Mfg. Co., Belgian, German and Swat. 50%

**Hooks—Cast Iron—**  
Bird Cage, Reading. 40%  
Clothes Line, Reading List. 40%  
Clothes Line, Stowell's. 70%  
Coat and Hat, Reading. 45&20%  
Coat and Hat, Stowell's. 70%  
Coat and Hat, Wrightsville. 40%  
Coat and Hat, Reading List. 40%  
Harness, Stowell's. 60%  
School House, Stowell's. 70%

**Wire—**  
Belt. 80&10@. %  
Wire C. & H. Hooks. 75&10@75&10&10%  
Columbian Hdw Co., Gen. 70&10%  
Parker Wire Goods Co. Ring. 70&10%  
Van Wagner, Coat and Hat. 70%  
Western W. G. Co. Molding. 75%  
Wire Goods Co.:  
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V. Brace, 75%; Czar Harness, 50&10%.

**Wrought Iron—**  
Box, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$1.50.  
Cotton. doz. \$1.05@1.25  
Wrought Staples, Hooks, &c. See Wrought Goods

**Miscellaneous—**  
Hooks, Bench, see Stops, Bench.  
Bush, Light, doz. \$1.75; Medium, \$3.55; Heavy, \$6.25  
Grass, best, all sizes, per doz. \$1.50  
Grass, common grades, all sizes, per doz. \$1.30  
Whiffletree. lb. 5¢@4¢  
**Hooks and Eyes:**  
Brass. 60&5@60&10&5%  
Malleable Iron. 70&10&10%  
Covert Mfg. Co. Gate and Seattle Hooks. 40%  
Pt. Madison Cut-Easy Corn Hooks. doz. \$3.25 net

**Horse Nails—**  
See Nails, Horse.

**Horseshoes—**  
See Shoes, Horseshoes.

**Hose, Rubber—**  
Garden Hose, ¾-inch:  
Competition. ft. 5 @ 6¢  
3-ply Guaranteed. ft. 8 @ 9¢  
4-ply Guaranteed. ft. 10 @ 11¢  
Cotton Garden, ¾-in., coupled:  
Low Grade. ft. 8 @ 9¢  
Fair Quality. ft. 10 @ 11¢

**Irons— Sad—**  
From 1 to 10. lb. 3¢@1¢  
R. B. Sad Irons. lb. 3¢@1¢  
Mrs. Potts', cents per set:  
Nos. 50 55 60 65  
Jap'd Tops. 65 62 75 72  
Tin'd Tops. 70 67 80 77  
New England Pressing, lb. 3¢@1¢

**Pinking—**  
Pinking Irons. doz. 60¢  
**Irons, Soldering—**  
See Copiers.

**Jacks, Wagon—**  
Covert Mfg. Co.:  
Auto Screw. 30&2%; Steel, 45%  
Lockport. 50%  
Lane's Steel. 30&10&2%  
Richards' Tiger Steel, No. 130. 50&10%  
Smith & Hemenway Co.'s. 25%

**Kettles—**  
Brass, Spun, Plain. 20@25%  
Enameled and Cast Iron—See Ware, Hollow.

**Knives—**  
**Butcher, Kitchen, &c.—**  
Foster Bros' Butcher, &c. 30%  
Wilkinson Shear & Cutlery Co. 60%

**Corn—**  
Wilkinson Wilcut Brand Knives and Hooks. 60%  
Wilmington Acme. doz. \$2.50  
Dent, \$2.75; Adj. Serrated, \$2.20  
Serrated, \$2.10; Yankee No. 1, \$1.50;  
Yankee No. 2, \$1.15.

**Drawing—**  
Standard List. 75&5@75&10%  
C. E. Jennings & Co., Nos. 45, 46, 60%  
Jennings & Griffin, Nos. 41, 42. 60%  
Swan's. 75%  
Watrous. 16%  
L. & I. J. White. 20&5@25%

**Hay and Straw—**  
Serrated Edge, per doz. \$5.75@6.00  
Ivan's Sickle Edge. doz. \$9.50  
Ivan's Serrated. doz. \$10.00

**Mincing—**  
Buffalo. doz. \$13.00

**Miscellaneous—**  
Farrier's. doz. \$3.00@3.25  
Westenholm's. doz. \$3.00@3.25

**Knobs—**  
Base, 2½-inch, Birch, or Maple, Rubber Tip. gro. \$1.25@1.50  
Carriage, Jap., all sizes. gro. 40¢@45¢  
Door, Mineral. doz. 65¢@70¢  
Door, Por. Jap'd. doz. 70¢@75¢  
Door, Por. Nickel. doz. \$2.05@2.15  
Bardsley's Wood Door, Shutters, &c. 15%

**Lacing, Leather—**  
See Belting, Leather.

**Ladders, Store, &c.—**  
Allith Mfg. Co., Reliable. 50%  
Lane's Store. 25%  
Myers' Noiseless Store Ladders. 50%  
Richards' Mfg. Co.:  
Improved Noiseless, No. 112. 50%  
Climax Shelf, No. 113. 50%  
Trolley, No. 109. 50%

**Ladles, Melting—**  
L. & G. Mfg. Co. (low list). 25%  
P. S. & W. 50%  
Reading. 60%

**Lanterns— Tubular—**  
Regular Tubular, No. 0. doz. \$4.25@4.50  
Lift Tubular, No. 0. doz. \$4.75@5.00  
Hinge Tubular, No. 0. doz. \$4.75@5.00  
Other Styles. 40¢@45¢

**Bull's Eye Police—**  
No. 1, 2½-inch. doz. \$3.00@3.25  
No. 2, 3-inch. doz. \$3.00@3.25

**Lasts and Stands, Shoe—**  
Stowell's Atlas, Malleable Iron. 50%  
Stowell's Badger, Cast Iron. 50%

**Latches— Thumb—**  
Roggin's Latches, with screw. doz. 35¢@40¢

**Door—**  
Allith Mfg. Co., Automatic, No. 400. doz. \$4.00  
Cronk & Carrier Mfg. Co., No. 101. doz. \$2.20  
Cronk & Carrier Mfg. Co., Latch. 50%  
Richards' Bull Dog, Heavy, No. 125. 50%  
Richards' Trump, No. 127. \$1.50  
Stowell's Steel. 50%

**Leaders, Cattle—**  
Small. doz. 50¢; large, 60¢  
Covert Mfg. Co.:  
Cotton, Hemp and Jute, 45%; Sisal, 33%.

**Lifters, Transom—**  
R. & E. 33%&10%

**Lines—**  
Wire Clothes, Nos. 18 19 20  
100 feet. \$2.25 2.00 1.75  
75 feet. \$1.75 1.35 1.10  
Amniston Waterproof Clothes, 50 ft., doz. \$25.00; Gilt Edge, \$23.00; Air Line, \$23.00; Acme, \$18.00; Alabama, \$17.00; Empire, \$16.00; Advance, \$14.00; Eclipse, \$13.50; Chicago, \$11.50; Standard, \$10.50; Columbia, \$9.50; Allston, \$13.50; Calhoun, \$12.00.  
Samson Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3. 40%  
Silver Lake Braided Chalk, No. 0, 3. \$7.50; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50.  
Masons' Lines, Shade Cord, &c. 20%  
White Cotton, No. 3½. \$1.50; No. 4, \$2.00; No. 4½. \$2.50; Colors, No. 3½. \$1.75; No. 4. \$2.25; No. 4½. \$2.75.  
Linen. No. 3½. \$2.50; No. 4. \$3.50; No. 4½. \$4.50.  
Tent and Awning Lines: No. 5. White Cotton, \$7.50; Drab Cotton, \$8.50.  
Clothes Lines, White Cotton: 50 ft. \$2.75; 60 ft. \$3.25; 70 ft. \$3.75; 75 ft. \$4.00; 80 ft. \$4.25; 90 ft. \$4.75; 100 ft. \$5.25.

**Locks— Cabinet—**  
Cabinet Locks. 33%@33%&10%  
**Door Locks, Latches, &c.—**  
NOTE.—Net Prices are very often made on these goods.  
Reading Hardware Co. 40%  
R. & E. Mfg. Co. 40%

**Elevator—**  
Stowell's. 50%

**Padlocks—**  
Wrought Iron. 75&10&5@80&5%  
Net prices are general.  
R. & E. Mfg. Co. Wrought Steel and Brass. 75&10%

**Sash, &c.—**  
Ives' Patent.  
Bronze and Brass, 60%; Crescent, 40&20%; Iron, 60%; Window Ventilating, 55%; Robinson Pat. Ventilating Sash Lock, 33%  
Wrought Bronze and Brass, 55%; Wrought Steel, 55%  
Pullman Patent Ventilating Lock. 25%  
Reading. 40%

**Machines—Boring—**  
Com. Up't, without Augers. \$2.00@2.25  
Com. Ang'r, without Augers. \$2.25@2.50  
Swan's Improved. 40&10%  
Jennings' Nos. 1 and 4. 35&5%  
Miller's Falls. 5.75  
Snell's, Rice's Pat. 2.50 2.75

**Corking—**  
Reisinger Invinible Hand Power. doz. \$48.00

**Fence—**  
**Hoisting—**  
Moore's Anti-Friction Differential Pulley Block. 30%  
Moore's Hand Hoist, with Lock Brake. 20%

**Ice Cutting—**  
Chandler's. 12%&10%

**Washing—**  
Boss Washing Machine Co.: Per doz.  
Boss No. 1. \$37.00  
Boss Rotary. \$34.00  
Champion Rotary Banner No. 1. \$51.00  
Standard Champion No. 1. \$44.00  
Standard Perfection. \$26.00  
Cint. Squire Western. \$30.00  
Uneda American, Round. \$30.00

**Mallets—**  
Hickory. 45&5@50%  
Lignumvita. 45&5@50%  
Timbers' Hickory and Applewood. doz. 45&5@50%

**Mangers, Stable—**  
Sweet Iron Works. 50%

**Mashers, Vegetable—**  
Western, W. G. Co., Potato. 60&10%

**Mats, Door—**  
Elastic Steel (W. G. Co.), new list. 50&10%  
Keystone Wire Matting Co.:  
Keystone. 50%  
Ideal. 50%

**Mattocks—**  
See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**  
**Mills, Coffee, &c.—**  
Enterprise Mfg. Co. 20&25%  
National List Jan. 1, 1902. 30%  
Great American Ball B'r'g, new list. 70%  
Parker's Columbia & Victoria. 50&10&60%  
Parker's Box and Side. 50&10&60%  
Swift, Lane Bros. Co. 30%

**Mowers, Lawn—**  
NOTE.—Net prices are generally quoted  
Cheapest. all sizes, \$1.85@2.00  
Cheap. all sizes, \$2.00@2.50  
Better Grade. all sizes, \$2.50@4.50  
12 14 16 18-in.  
High Grade. \$4.50 4.75 5.00 5.25  
Continental. 60&5%  
Great American. 70%  
Great American Ball B'r'g, new list. 70%  
Quaker City. 70%  
Pennsylvania. 60&5%  
Pennsylvania, Jr. Ball Bearing. 60%  
Pennsylvania Golf. 50%  
Pennsylvania Horse. 33&5%  
Pennsylvania Pony. 40&5%  
Granite State.  
Style A. Low Wheel. 70&10&10&5%  
Style B. Low Wheel. 70&10&5%  
Style C. High Wheel. 70&10%  
Style D. High Wheel. 70%  
Philadelphia:  
Style M. S. C. K. T. 70&5%  
Style A. 11 Steel. 60&5%  
Style E. High Wheel. 70&10&5%  
Drexel and Gold Coin, special list. 50%

**Nails—**  
Wire Nails and Brads, Miscellaneous. 85&10@85&10&5%  
Cut and Wire. See Trade Report.  
Hungarian, Finishing, Upholsterers' &c. See Tacks.

**Horse—**  
Nos. 4 7 8 9 10  
Anchor. 23 21 20 19 18. 40&5%  
Champlain. 23 26 25 24 23. 50%  
Coleman. 13 12 11 11 11. net  
New Haven. 23 21 20 19 18. 40&5%  
Western. doz. \$8.4¢  
Jobbers' Special Brands. per lb. 9¢@10¢

**Picture—**  
Brass H'd. 15 55 60 70. gro  
Por. Head. 1.10 1.10 1.10. gro

**Nippers—**  
See Pliers and Nippers.

**Nuts—**  
Cold Punched. Off list.  
Square, Blank or Tapped. 4.00@5.00¢  
Hexagon, Blank or Tapped. 5.30@5.10¢

**Locks— Cabinet—**  
Cabinet Locks. 33%@33%&10%  
**Door Locks, Latches, &c.—**  
NOTE.—Net Prices are very often made on these goods.  
Reading Hardware Co. 40%  
R. & E. Mfg. Co. 40%

**Elevator—**  
Stowell's. 50%

**Padlocks—**  
Wrought Iron. 75&10&5@80&5%  
Net prices are general.  
R. & E. Mfg. Co. Wrought Steel and Brass. 75&10%

**Sash, &c.—**  
Ives' Patent.  
Bronze and Brass, 60%; Crescent, 40&20%; Iron, 60%; Window Ventilating, 55%; Robinson Pat. Ventilating Sash Lock, 33%  
Wrought Bronze and Brass, 55%; Wrought Steel, 55%  
Pullman Patent Ventilating Lock. 25%  
Reading. 40%

**Machines—Boring—**  
Com. Up't, without Augers. \$2.00@2.25  
Com. Ang'r, without Augers. \$2.25@2.50  
Swan's Improved. 40&10%  
Jennings' Nos. 1 and 4. 35&5%  
Miller's Falls. 5.75  
Snell's, Rice's Pat. 2.50 2.75

**Corking—**  
Reisinger Invinible Hand Power. doz. \$48.00

**Fence—**  
**Hoisting—**  
Moore's Anti-Friction Differential Pulley Block. 30%  
Moore's Hand Hoist, with Lock Brake. 20%

**Ice Cutting—**  
Chandler's. 12%&10%

**Washing—**  
Boss Washing Machine Co.: Per doz.  
Boss No. 1. \$37.00  
Boss Rotary. \$34.00  
Champion Rotary Banner No. 1. \$51.00  
Standard Champion No. 1. \$44.00  
Standard Perfection. \$26.00  
Cint. Squire Western. \$30.00  
Uneda American, Round. \$30.00

**Mallets—**  
Hickory. 45&5@50%  
Lignumvita. 45&5@50%  
Timbers' Hickory and Applewood. doz. 45&5@50%

**Mangers, Stable—**  
Sweet Iron Works. 50%

**Mashers, Vegetable—**  
Western, W. G. Co., Potato. 60&10%

**Mats, Door—**  
Elastic Steel (W. G. Co.), new list. 50&10%  
Keystone Wire Matting Co.:  
Keystone. 50%  
Ideal. 50%

**Mattocks—**  
See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**  
**Mills, Coffee, &c.—**  
Enterprise Mfg. Co. 20&25%  
National List Jan. 1, 1902. 30%  
Great American Ball B'r'g, new list. 70%  
Parker's Columbia & Victoria. 50&10&60%  
Parker's Box and Side. 50&10&60%  
Swift, Lane Bros. Co. 30%

**Mowers, Lawn—**  
NOTE.—Net prices are generally quoted  
Cheapest. all sizes, \$1.85@2.00  
Cheap. all sizes, \$2.00@2.50  
Better Grade. all sizes, \$2.50@4.50  
12 14 16 18-in.  
High Grade. \$4.50 4.75 5.00 5.25  
Continental. 60&5%  
Great American. 70%  
Great American Ball B'r'g, new list. 70%  
Quaker City. 70%  
Pennsylvania. 60&5%  
Pennsylvania, Jr. Ball Bearing. 60%  
Pennsylvania Golf. 50%  
Pennsylvania Horse. 33&5%  
Pennsylvania Pony. 40&5%  
Granite State.  
Style A. Low Wheel. 70&10&10&5%  
Style B. Low Wheel. 70&10&5%  
Style C. High Wheel. 70&10%  
Style D. High Wheel. 70%  
Philadelphia:  
Style M. S. C. K. T. 70&5%  
Style A. 11 Steel. 60&5%  
Style E. High Wheel. 70&10&5%  
Drexel and Gold Coin, special list. 50%

**Nails—**  
Wire Nails and Brads, Miscellaneous. 85&10@85&10&5%  
Cut and Wire. See Trade Report.  
Hungarian, Finishing, Upholsterers' &c. See Tacks.

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Anchor. 23 21 20 19 18. 40&5%  
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See Pliers and Nippers.

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Square, Blank or Tapped. 4.00@5.00¢  
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Cabinet Locks. 33%@33%&10%  
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**Fence—**  
**Hoisting—**  
Moore's Anti-Friction Differential Pulley Block. 30%  
Moore's Hand Hoist, with Lock Brake. 20%

**Ice Cutting—**  
Chandler's. 12%&10%

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**Mashers, Vegetable—**  
Western, W. G. Co., Potato. 60&10%

**Mats, Door—**  
Elastic Steel (W. G. Co.), new list. 50&10%  
Keystone Wire Matting Co.:  
Keystone. 50%  
Ideal. 50%

**Mattocks—**  
See Picks and Mattocks.

**Milk Cans—See Cans, Milk.**  
**Mills, Coffee, &c.—**  
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Pennsylvania Golf. 50%  
Pennsylvania Horse. 33&5%  
Pennsylvania Pony. 40&5%  
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**Nails—**  
Wire Nails and Brads, Miscellaneous. 85&10@85&10&5%  
Cut and Wire. See Trade Report.  
Hungarian, Finishing, Upholsterers' &c. See Tacks.

**Horse—**  
Nos. 4 7 8 9 10  
Anchor. 23 21 20 19

Reading 78.....	doz.	\$6.25
Rocking Table.....	doz.	\$6.20
Turn Table.....	doz.	\$6.00
White Mountain.....	doz.	\$5.00

**Potato—**

Saratoga.....	doz.	\$7.00
White Mountain.....	doz.	\$6.00

**Picks and Mattocks—**

List, Feb. 23, 1899.....	75¢@75¢
Cronk's Handled Garden M.....	33½¢
doz., \$6.40.....	

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**

Brass.....	50¢@10¢@60¢
Iron, list Nov. 11, '85.....	60¢@60¢@10¢

**Pipe, Cast Iron Soil—**

Standard, 2-6 in. 50'@10'@50'@10'@5'	
Extra Heavy, 2-6 in. 50'@10'@5'	
Fittings.....	70¢@10'@70¢@10'@5'

**Pipe, Merchant—**

		Consumers, Carloads.	
		Steel.	Iron.
		Blk. Galv.	Blk. Galv.
1½ & 2 in. 71' 55%	63%	52%	52%
2 in. 71' 55%	63%	52%	52%
2½ in. 71' 55%	63%	52%	52%
3 in. 71' 55%	63%	52%	52%
3½ in. 71' 55%	63%	52%	52%
4 in. 71' 55%	63%	52%	52%
4½ in. 71' 55%	63%	52%	52%
5 in. 71' 55%	63%	52%	52%
5½ in. 71' 55%	63%	52%	52%
6 in. 71' 55%	63%	52%	52%
6½ in. 71' 55%	63%	52%	52%
7 in. 71' 55%	63%	52%	52%
7½ in. 71' 55%	63%	52%	52%
8 in. 71' 55%	63%	52%	52%
8½ in. 71' 55%	63%	52%	52%
9 in. 71' 55%	63%	52%	52%
9½ in. 71' 55%	63%	52%	52%
10 in. 71' 55%	63%	52%	52%
10½ in. 71' 55%	63%	52%	52%
11 in. 71' 55%	63%	52%	52%
11½ in. 71' 55%	63%	52%	52%
12 in. 71' 55%	63%	52%	52%

**Pipe, Vitrified Sewer—**

Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:	
First class.....	85¢@86¢
Second class.....	90¢
NOTE.—Market irregular.	

**Pipe, Stove—**

Edwards' Nested: C. L. L. C. L.	
5 in., per 100 joints.....	\$7.00 \$8.00
6 in., per 100 joints.....	7.50 8.50
7 in., per 100 joints.....	8.50 9.50

**Planes and Plane Irons—**

		Wood Planes—	
		Bench, first qual.....	35¢@35¢@10¢
		Bench, second qual.....	45¢@15¢@10¢
		Attiling.....	30¢@30¢@10¢
		Bailey's (Stanley R. & L. Co.).....	40¢
		Chapin-Stephens Co.:.....	
		Bench, First Quality.....	35%
		Bench, Second Quality.....	35%
		Molding and Miscellaneous.....	30%
		Toy and German.....	35%
		Chapin's.....	60%
		Union.....	60%

**Iron Planes—**

Bailey's (Stanley R. & L. Co.).....	40%
Chapin's Iron Miscellaneous.....	45%
Miscellaneous Planes (Stanley R. & L. Co.).....	35%
Union.....	60%

**Plane Irons—**

Wood Bench Plane Irons....		25'@25¢10%
Buck Bros.....		30%
Chapin-Stephens Co.....		25%
Stanley R. & L. Co.....		35%
Union.....		60%
L. & J. J. White.....		20¢&25¢

**Planters, Corn, Hand—**

Kohler's Eclipse.....	doz.	\$8.50
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**Plates—**

Feloe.....	lb.	4¢@4½¢
Self-Sealing Pie Plates (R. M. Co.).....	doz.	\$2.00.....50%

**Pliers and Nippers—**

Button Pliers.....	75¢@10¢@75, 10, 5%
Gas Burner, per doz., 5 in., \$1.25	
@ \$1.30; 6 in., \$1.45 @ \$1.50.	
Gas Pipe.....	7 8 10 12-in.
	\$2.00 \$2.25 \$2.75 \$3.50

Acme Nippers.....	50¢@55%
Cronk & Carrier Mfg. Co.:.....	
American Button.....	75¢@10¢
Cronk's.....	60%
Stub's Pattern.....	35%
Combination and others.....	50%
Heller's Farmers' Nippers, Pincers and Tools.....	40¢@10¢@10¢@10¢
The Nettleton Mfg. Co. Reversible Cutting Nippers.....	40%
P. S. & W. Timmers' Cutting Nippers.....	10%
Wm. Schollhorn Co.:.....	
Bernard, 33½%; Elm City, 33½%; Lodi, 50%; Paragon, 50%.	
Swedish Side, Eud and Diagonal Cutting Pliers.....	30%
Utica Drop Forge & Tool Co.:.....	
Pliers and Nippers, all kinds.....	40%

**Plumbs and Levels—**

Chapin-Stephens Co.:.....	
Plumbs and Levels.....	30¢@30¢@10¢@5%
Chapin's Imp. Brass Cor. 40¢@40¢@10¢	
Pocket Levels.....	30¢@30¢@10¢@5%
Extension Sights.....	30¢@30¢@10¢@5%
Machinists' Levels.....	40¢@40¢@10¢@5%
Disston's Plumbs and Levels.....	67½%
Disston's Pocket Levels.....	67½%
C. E. Jennings & Co.'s Iron.....	33½%
C. E. Jennings & Co.'s Iron, Adjust.....	33½%
Stanley R. & L. Co.....	60¢@10¢
Stanley's Duplex.....	35%
Woods' Extension.....	33½%

**Poachers, Egg—**

Buffalo Steam Egg Poachers, doz., No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00.....	80%
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**Points, Glaziers'—**

Bulk and 1-lb. papers.....	lb.	10¢
1½-lb. papers.....	lb.	9¢@10¢
1-lb. papers.....	lb.	9¢@11¢

**Pokes, Animal—**

Ft. Madison Hawkeye.....	doz.	\$3.25
Ft. Madison Western.....	doz.	\$4.00

**Police Goods—**

Manufacturers' Lists.....	25¢@25¢@5%
Tower's.....	25%

**Polish—Metal, Etc—**

Glasbrite, No. 2, 5 lb can (powder), each, \$1.25; doz., \$12.00; No. 2, 10 lb can (cake), each, \$2.50; doz., \$24.00.	
Prestoline Liquid, No. 1 (½ pt.), doz., \$3.00; No. 2 (1 qt.), \$9.72.....	40%
Prestoline Paste.....	40%
George William Hoffman:	
U. S. Metal Polish Paste, 3 oz. boxes, doz., 50¢; doz., \$4.50; 1 lb boxes, doz., \$2.25.....	
U. S. Liquid, 8 oz. cans, doz., \$1.25; doz., \$12.00.	
Barkeleys' Friend Metal Polish, doz., \$1.75; doz., \$18.00.	
Wynn's White Silk, 8 pt. cans, doz., doz.....	\$2.00

**Stove—**

Black Eagle Benzine Paste, 5 lb cans, doz., 75¢	
Black Eagle, Liquid, ½ pt. cans.....	75¢
Black Jack Paste, ½ lb cans, gr. \$9.00	
Black Kid Paste, 5 lb cans, \$0.65	
Ladd's Black Beauty Liquid, per 100 tins.....	\$6.75
Joseph Dixon's, gr. \$5.75.....	
Dixon's Plumbago.....	10%
Pireside.....	gr. \$2.50
Gem, gr. \$4.50.....	10%
Jet Black.....	gr. \$3.50
Peerless Iron Enamel, 10 oz. cans.....	doz. \$1.50
Wynn's:	
Black Silk, 5 lb. pail.....	each 70¢
Black Silk, ½ lb box.....	doz. \$1.00
Black Silk, 5 oz. box.....	doz. \$0.75
Black Silk, ½ pt. liq.....	doz. \$1.00

**Poppers, Corn—**

1 qt., Square.....	gro. \$8.00
1 qt., Round.....	gro. \$9.00
1½ qt., Square.....	gro. \$10.00
2 qt., Square.....	gro. \$12.00

**Post Hole and Tree Augers and Diggers—**

See also Diggers, Post Hole, etc.

**Posts, Steel—**

Steel Fence Posts, each, 5 ft., 42¢; 5 ft., 46¢; 6 ft., 48¢.	
Steel Hitching Posts.....	each \$1.30

**Potato Parers—**

See Parers, Potato.

**Pots, Glue—**

Enameled.....	40%
Tinned.....	35%

**Powder—**

		In Canisters:	
		Duck, 1 lb.....	each 45¢
		Fine Sporting, 1 lb.....	each 75¢
		Rifle, ½ lb.....	each 15¢
		Rifle, 1-lb.....	each 25¢
		In Kegs:	
		12½-lb. kegs.....	\$3.50
		25-lb. kegs.....	\$4.50
		King's Semi-Smokeless:	
		Keq (25 lb bulk).....	\$6.50
		Half Keq (12½ lb bulk).....	\$3.50
		Quarter Keq (6¼ lb bulk).....	\$1.90
		Case 24 (1 lb cans bulk).....	\$2.50
		Half case (1 lb cans bulk).....	\$4.50
		King's Smokeless: Shot Gun Rifle.	
		Keq (25 lb bulk).....	\$12.00 \$15.00
		Half Keq (12½ lb bulk).....	6.25 7.75
		Quarter Keq (6¼ lb bulk).....	3.25 4.00
		Case 24 (1 lb cans bulk).....	14.00 17.00
		Half case 12 (1 lb c. bk.).....	7.25 8.75
		Robin Hood Smokeless Shot Gun.....	50¢@20%

**Presses—**

Enterprise Mfg. Co.....	20¢@25%
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**Fruit and Jelly—**

Seal Presses—	
Morrill's No. 1, doz., \$20.00.....	50%

**Pruning Hooks and Shears**

See Shears.

**Pullers, Nail—**

Cyclops.....	50%
Miller's Falls, No. 3, doz., \$12.00.....	33½%
Morrill's No. 1, Nail Puller, doz., \$20.00.....	50%
Pearson No. 1, Cyclone Spike Puller, each \$30.00.....	50%
Scranton, Case Lotion.....	\$3.50
No. 2B (large).....	\$5.00
No. 3B (small).....	\$5.00
Smith & Hemenway Co.:.....	
Diamond B, case lots, doz., No. 2, \$6.00; No. 3, \$5.50.....	
Giant No. 1, doz., \$18; No. 2, \$16.50; No. 3, \$15.....	33½%
Staple Pullers.....	60%
Parrot Tack and Stub Puller, doz., 75c; doz., \$4.00.....	

**Pulleys, Single Wheel—**

Inch	.....	1½	1¾	2	3
Awning or Tackle,					
doz.	.....	\$0.30	.45	.60	1.05
Hay Fork, Swivel or Solid Eye,					
doz., 4 in., \$1.25; 5 in.,	.....	\$1.55			
Inch	.....	1½	1¾	2	3
Hot House, doz.	.....	\$0.65	.85	1.05	1.50
Inch	.....	1½	1¾	2	3
Screw, doz.	.....	\$0.16	.19	.23	.36
Inch	.....	1½	1¾	2	3
Side, doz.	.....	\$0.25	.30	.55	.60
Inch	.....	1½	1¾	2	3
Stowell's:					
Ceiling or End, Anti-Friction.	.....	60¢@10¢			
Dumb Waiter, Anti-Friction.	.....	60¢@10¢			
Electric Light.	.....	60%			
Side, Anti-Friction.	.....	60¢@10¢			

**Sash Pulleys—**

Common Frame; Square or Round End, per doz, 1½ and 2 in.....	16¢@19¢
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**Auger Mortise, no Face Plate,**

per doz., 1½ and 2 in.....	17¢@19¢
Acme.....	1½ in., 10¢; 2 in., 19¢
For-All-Steel, Nos. 3 and 7, 2 in.....	50%
Grand Rapids All Steel Noiseless.....	50%
Ideal.....	70¢@10¢
Niagara.....	1½ in., 16¢; 2 in., 19¢
No. 26, Troy, 1½ in., 14¢; 2 in., 16¢	
Star.....	1½ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.	

**Pumps—**

Cistern.....	60¢@60¢@10¢
Pitcher Spout.....	80¢@80¢@10¢
Wood Pumps, Tubing, etc.....	45¢@50%
Barnes Dbl. Acting (low list).....	50%
Barnes' Pitcher Spout.....	75¢@10¢
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....	\$16.00
Daisy Spray Pump.....	doz. \$6.75
Flint & Walling's, Fast Mail Hand, (low list).....	55%
Flint & Walling's Fast Mail (low list).....	55%
Flint & Walling's Tight Top Pitcher.....	80%
National Specialty Mfg. Co., Measuring.....	30%
Mechanical Sprayer.....	40%
Myers' Pumps (low list).....	50%
Myers' Power Pumps.....	50%
Myers' Spray Pumps.....	50¢@10¢

**Pump Leathers—**

		Plunger and Lower Valve—Per gro.:	
		Inch.....	2 2½ 3 3½
		doz.....	\$2.20 2.50 2.75 3.00
		Inch.....	3 3½ 4 4½
		doz.....	\$3.30 3.60 3.85 4.10
		Plunger Cup Leathers—Per 100:	
		Inch.....	2½ 3 3½ 4
		doz.....	\$2.75 3.85 5.00 6.00

**Punches—**

Saddlers' or Drive, good.....	doz. 50¢@75¢
Spring, single tube, good quality.....	\$1.75@2.00
Revolving (4 tubes).....	doz. \$3.50@3.75
Bemis & Call Co.'s Cast St'l Drive.....	50%
Bemis & Call Co.'s Check.....	50%
Morrill's Nos. 1AA, 1A, 1B, 1C, \$15.00	
1 Hercules 1 die, each.....	50%
Niagara Hollow Punches.....	40%
Niagara Solid Punches.....	55@10%
Wm. Schollhorn Co.:	
Bernard.....	33%
Lodi, 50'; Paragon.....	50%
Steel Screw, B. & K. Mfg. Co.....	50%
Timners' Hollow, P., S. & W. Co.....	40%
Timners' Solid, P., S. & W. Co.....	60%
doz., \$1.41.....	



## Rules

<b>Boxwood</b> .....	60@60&10%
<b>Ivory</b> .....	35&10@35&10&10%
Chapin-Stephens Co.: .....	60%
Boxwood .....	60%
Flexfold .....	35&10&10%
Ivory .....	35&10&10%
Miscellaneous .....	50@50&10&10%
Stephens' Combination .....	55&55&10%
Stationers' .....	10&10&10%
Keuffel & Esser Co.: .....	35&10%
Folding, Wood .....	35&10%
Folding, Steel .....	33&10%
Lufkin's Steel .....	50&10%
Lufkin's Lumber .....	60%
Stanley R. & L. Co.: .....	62&10%
Boxwood .....	62&10%
Ivory .....	45%
Miscellaneous .....	40%
Zig Zag .....	40%
Zig Zag, Pin Joint .....	42&10%
Upson Nut Co.: .....	60@60&10%
Boxwood .....	35&10@35&10&10%
Ivory .....	35&10@35&10&10%

## Sash Balances—

See Balance, Sash.

## Sash Locks—

See Locks, Sash.

## Sash Weights—

See Weights, Sash.

## Sausage Stuffers or Fillers

See Stuffers or Fillers, Sausage.

## Saw Frames—

See Frames, Saw.

## Saw Sets—See Sets, Saw.

## Saw Tools—See Tools, Saw.

## Saws—

<b>Atkins:</b> .....	50%
Circular .....	50%
Band .....	50&10@60%
Cross Cuts .....	35&5%
Mulay, Mill and Drag .....	50%
One-Man Saw, 40% .....	50%
40%; Hand, Compass, &c., 40% .....	50%
Chapin-Stephens Co.: .....	30@30&10%
Turning Saws and Frames .....	30@30&10%
Diamond Saw & Stamping Works: .....	30&10&10%
Sterling Kitchen Saws .....	30&10&10%
<b>Disston's:</b> .....	50%
Circular, Solid and Ins'ted Tooth .....	60%
Band, 2 to 14 in. wide .....	60%
Hand, 1/4 to 1 1/2 .....	60%
Crosscuts .....	45%
Narrow Crosscuts .....	50%
Mulay, Mill and Drag .....	50%
Framed Woodsaws .....	25%
Woodsaw Blades .....	25%
Woodsaw Rods .....	25%
Hand Saws, Nos. 12, 99, 9, 16, d100 .....	25%
D8, 120, 76, 77, 8 .....	25%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1 .....	25%
0, 00, Combination .....	25%
Compass, Key Hole, &c. .....	30%
Butcher Saws and Blades .....	30%
C. E. Jennings & Co.'s: .....	25%
Back Saws .....	25%
Butcher Saws .....	30%
Compass and Key Hole Saws .....	35&5%
Framed Wood Saws .....	30%
Hand Saws .....	20&2%
Wood Saw Blades .....	35%
<b>Millers Falls:</b> .....	15&10%
Star Saw Blades .....	15&10%
Peace & Richardson's Hand Saws .....	30%
<b>Simonds:</b> .....	50%
Circular Saws .....	50%
Crescent Ground Cross Cut Saws .....	35%
One-Man Cross Cuts .....	40&10%
Gang Mill, Mulay and Drag Saws .....	50%
Band Saws .....	25%
Back Saws .....	25&5&10%
Butcher Saws .....	35&5&10%
Hand Saws .....	25&5&10%
Hand Saws, Bay State Brand .....	45%
Compass, Key Hole, &c. .....	25&5&10%
Wood Saws .....	35&5&10%
Springfield Mach. Screw Co.: .....	35&5&10%
Diamond Kitchen Saws .....	40&10&50%
Butcher Saws and Blades .....	35&5&10%
Wheeler, Madden & Clemens Mfg. Co.'s Cross Cut Saws .....	50%

## Hack Saw Blades and Frames—

<b>Atkins' Hack Saw Blades A A A .....</b>	25%
<b>Disston's:</b> .....	25%
Concave Blades .....	35%
Keystone Blades .....	35%
Hack Saw Frames .....	30%
Fitchburg File Works, The Best .....	35%
C. E. Jennings & Co.'s: .....	35%
Hack Saw Frames, Nos. 175, 180 .....	40&7%
Hack Saws, Nos. 175, 180, complete .....	40&7%
<b>Goodell's Hack Saw Blades .....</b>	40%
<b>Griffin's Hack Saw Frames .....</b>	35&5&10%
<b>Griffin's Hack Saw Blades .....</b>	35&5&10%
<b>Springfield Mach. Screw Co.: .....</b>	35%
Diamond Hack Saw Blades .....	35%
Diamond Hack Saw Frames .....	50%
Star Hack Saws and Blades .....	15&10%
Sterling Hack Saw Blades .....	30&10&10%
Sterling Hack Saw Frames .....	30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 .....	10%
Victor Hack Saw Blades .....	40%
Victor Hack Saw Frames .....	40%

## Scroll—

<b>Barnes, No. 7, \$15 .....</b>	25%
<b>Barnes' Scroll Saw Blades .....</b>	40%
<b>Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18 .....</b>	25%
<b>with boring attachment, \$20 .....</b>	25%
<b>Lester, complete, \$10.00 .....</b>	15&10%
<b>Rogers, complete, \$4.00 .....</b>	15&10%

## Scales—

<b>Family, Turnbull's .....</b>	50@50&10%
<b>Counter:</b> .....	50%
Hatch, Platform, 1/2 oz. to 1 lb. .....	50%
Two Platforms, 1/2 oz. to 8 lb. .....	50%
One Platform, Plain .....	50%
Union Platform, Stpd. .....	50%
<b>Chattillon's:</b> .....	50%
Eureka .....	50%
Favorite .....	50%
Crocker's Trip Scales .....	50%
Chicago Scale Co.: .....	50%
The "Little Detective" .....	50%
Union or Family No. 2 .....	50%

Portable Platform (reduced list) .. 50%  
Wagon or Stock (reduced list) .. 25&35%  
"The Standard" Portables .. 50%  
"The Standard" R. R. and Wagon .. 50%

## Scrapers—

<b>Box, 1 Handle .....</b>	doz. \$2.00@2.25
<b>Box, 2 Handle .....</b>	doz. \$2.50@2.60
<b>Ship .....</b>	Light, \$2.00; Heavy, \$3.50
<b>Adjustable Box Scraper (S. R. &amp; L. Co.), \$6.00 .....</b>	45%
Chapin-Stephens Co., Box .....	30@30&10&10%

## Screens, Window and Frames—

Maine Screen Frames .....	40&10&5%
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See also Doors.

## Screws—Bench and Hand

<b>Bench, Iron, doz., 1 in. .....</b>	\$2.50@2.75
<b>2 1/2; 1 1/2, \$3.00@3.25; 1 3/4, \$3.50@3.75 .....</b>	
<b>Bench Wood .....</b>	25@25&5%
<b>Hand, Wood .....</b>	25@25&5%
R. Bliss Mfg. Co., Hand .....	30@30&10%
Chapin-Stephens Co., Hand .....	25%
<b>Coach, Lag and Hand Rail—</b>	
Lag, Cone Point, list Oct. 1, '99 .....	75&15%
Coach, Gimlet Point, list Oct. 1, '99 .....	75&10%
Hand Rail, list Jan. 1, '81 .....	70&10@75%

## Jack Screws—

<b>Standard List .....</b>	75&10@80%
Millers Falls .....	50&10&10%
Millers Falls, Roller .....	50&10%
P. S. & W. .....	50%
Swett Iron Works .....	75@80%

## Machine—

List Jan. 1, '98:

<b>Flat or Round Head, Iron .....</b>	50@50&10%
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<b>Flat or Round Head, Brass .....</b>	50@50&10%
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## Set and Cap—

<b>Set (Iron) .....</b>	80@80&5%
<b>Set (Steel), net advance over Iron .....</b>	25%
<b>Sq. Hd. Cap .....</b>	75%
<b>Hex. Hd. Cap .....</b>	75%
<b>Rd. Hd. Cap .....</b>	60&10%
<b>Fillister Hd. Cap .....</b>	60&10&10%

## Wood—

<b>List July 23, 1903.</b>	
<b>Flat Head, Iron .....</b>	87&10@87&10%
<b>Round Head, Iron .....</b>	85&10%
<b>Flat Head, Brass .....</b>	82&10%
<b>Round Head, Brass .....</b>	80&10%
<b>Flat Head, Bronze .....</b>	77&10%
<b>Round Head, Bronze .....</b>	75&10%
<b>Drive Screws .....</b>	87&10%

## Scroll Saws—

See Saws, Scroll.

## Scythes—

<b>Grass, No. 1, Plain .....</b>	\$6.25@6.75
<b>Clipper, Bronzed Webb .....</b>	\$6.50@7.00
<b>No. 3 Clipper, Pol'd Webb .....</b>	\$6.75@7.25

<b>No. 6 Clipper and Solid Steel .....</b>	\$7.00@7.50
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<b>Bush, Weed and Bramble, No. 2 .....</b>	\$6.50@7.00
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<b>Grain, No. 1 .....</b>	\$8.25@8.75
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<b>Bronzed Webb, No. 1 .....</b>	\$8.50@9.00
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<b>Nos. 3 and 4 Clipper, Grain .....</b>	\$8.75@9.25
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<b>Solid Steel, No. 6 .....</b>	\$9.25@9.75
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## Seeders, Raisin—

Enterprise .....	25@30%
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## Sets—Axl and Tool—

<b>Fray's Adj. Tool Handles, No. 1, \$12; No. 2, \$18; No. 3, \$12; No. 4, \$9; No. 5, \$7 .....</b>	50%
<b>C. E. Jennings &amp; Co.'s Model Tool Holders .....</b>	30%
<b>Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$15 .....</b>	15&10%

## Garden Tool Sets—

<b>Ft. Madison Three Plows, Hoe, Rake and Shovel .....</b>	doz sets \$9.00
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## Sets, Nail—

<b>Octagon .....</b>	gro. \$3.50@3.75
<b>Buck Bros. .....</b>	25%
<b>Cannon's Diamond Point .....</b>	gro. \$12.40%
<b>Mayhew's .....</b>	gro. \$9.00
<b>Snell's Corrugated, Cup Pt. .....</b>	gro. \$7.20
<b>Snell's Knurled, Cup Pt. .....</b>	gro. \$7.20
<b>Springfield Mach. Screw Co.: .....</b>	gro. \$7.50
<b>Diamond Knurled Cup Pt. .....</b>	gro. \$7.50

## Rivet—

<b>Regular list .....</b>	75@75&10%
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## Saw—

<b>Atkins:</b> .....	40%
Criterion .....	40%
Adjustable .....	40%
Bemis & Call Co.'s: .....	30%
Cross Cut .....	30%
Plate .....	20%
Disston's Star, Monarch and Triumph .....	30%
Morrill's No. 1 .....	\$15.00 .. 50%
No. 3 and 4, Cross Cut .....	50%
No. 5, Mill .....	\$30.00 .. 50%
No. 10, 11, 95, \$15.00 ..	50%
No. 1 Old Style, \$10.00 ..	50%
Special, \$16.25 ..	50%
Giant Royal Cross Cut .....	doz. \$8.00
Royal, Hand .....	doz. \$4.50
Taintor Positive .....	doz. \$6.75

## Shaving—

<b>Fox Shaving Sets, No. 30 .....</b>	doz. set, \$24.00
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## Sharpeners, Knife—

<b>Chicago Wheel &amp; Mfg. Co. ....</b>	70%
<b>Pike Mfg. Co.: .....</b>	
Fast Cut Pocket Knife Hones .....	\$1.50
Mounted Kitchen Sand Stone .....	\$1.50
Natural Grit Carving Knife .....	\$3.00
Quick Cut Emery Carving Knife .....	\$1.50
Quick Edge Pocket Knife .....	\$1.50
Hones, # doz. ....	\$1.50

## Skate—

<b>Smith &amp; Hemenway Co. ....</b>	20%
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## Shaves, Spoke—

<b>Iron .....</b>	doz. \$1.10@1.25
<b>Wood .....</b>	doz. \$1.75@2.25
Bailey's (Stanley R. & L. Co.) .....	45%
Razor Edge (Stanley R. & L. Co.) .....	35%
Chapin-Stephens Co. ....	30@30&10&10%
Goodell's, # doz. \$9.00 ..	15&10%
Wood's Fl and F2 .....	50%

## Shears—

<b>Cast Iron .....</b>	7 8 9 in.
Best .....	\$16.00 18.00 20.00 gro.
Good .....	\$13.00 15.00 17.00 gro.
Cheap .....	\$5.00 6.00 7.00 gro.

## Straight Trimmers, &amp;c.—

<b>Best quality Jap. ....</b>	70@70&10%
<b>Best quality, Nickel .....</b>	60@60&10%
<b>Fair quality, Jap. ....</b>	80@80&5%
<b>Fair quality, Nickel .....</b>	75@75&10%
<b>Tailors' Shears .....</b>	40@40&10%
Acme Cast Shears .....	40@40&5%
Heinrich's Tailor's Shears .....	10%
Wilkinson's Sheep, 1900 list, 30&10&5%	
Grass, 50&10%; Horse or Mule, 50&10%	

## Tinners' Snips—

<b>Steel Blades .....</b>	20&5@20&10%
<b>Steel Laid Blades .....</b>	40&10@50%
Forged Handles, Steel Blades, Berlin .....	50@50&5%
Heinrich's Snips .....	40%
Jennings & Griffin Mfg. Co.'s 6 1/2 to 10 in. ....	50%
Niagara Snips .....	40%
P. S. & W. Forged Handles .....	20%

## Pruning Shears—

<b>Cronk's Hand Shears .....</b>	33&10%
<b>Cronk's Wood Handle Shears .....</b>	33&10%
<b>Disston's Combined Pruning Hook and Saw, # doz. \$18.00 ..</b>	25%
<b>Disston's Pruning Hook only, # doz. \$12.00 ..</b>	25%
<b>John T. Henry Mfg. Co.: .....</b>	50&10%
<b>Pruning Shears, all grades ..</b>	50&10%
<b>P. S. &amp; W. Co. ....</b>	33&10%
<b>Wilkinson's Hedge, Wilcut Brand ..</b>	60&10%
<b>Wilkinson's Lawn and Border, Wilcut Brand ..</b>	60&10%

## Sheaves—Sliding Door—

<b>Stowell's Anti-Friction .....</b>	50%
<b>Reading .....</b>	40%
<b>R. &amp; E. list .....</b>	33&10%
<b>Wrightsville Hatfield Pattern ..</b>	80%

## Sliding Shutter—

<b>R. &amp; E. list .....</b>	33&10%
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## Shells—Shells, Empty—

<b>Brass Shells, Empty:</b> .....	
Climax, Club, Rival, 10 and 12 gauge .....	65&5%
Paper Shells, Empty:	
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge ..	25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge ..	20%
Climax, Union, League, New Rival, 10 and 12 gauge ..	25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge ..	20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge ..	33&10%
Robin Hood, Low Brass .....	20&5%
Robin Hood, High Brass .....	30&5%

## Shells, Loaded—

<b>Loaded with Black Powder ..</b>	40%
<b>Loaded with Smokeless Powder, medium grade ..</b>	40&5%
<b>Loaded with Smokeless Powder, high grade ..</b>	40&10&10%
<b>Robin Hood Smokeless Powder:</b> .....	
Robin Hood, Low Brass .....	50%
Comets, High Brass .....	50&10&5%

## Shoes, Horse, Mule, &amp;c.—

F.o.b. Pittsburgh:

<b>Iron .....</b>	per keg \$4.00
<b>Steel .....</b>	per keg \$3.75
<b>Burdens, all sizes .....</b>	per keg \$3.90

## Shot—

<b>Drop, up to B .....</b>	25-lb. bag, \$1.90
<b>Drop, B and larger .....</b>	2.15
<b>Buck .....</b>	2.15
<b>Chilled .....</b>	2.15
<b>Dust .....</b>	2.35

## Shovels and Spades—

Association List, Nov. 15, 1902. 40%

## Snow Shovels—

<b>Long Handle .....</b>	\$2.75@3.50
<b>Wood and Mail, D. Handle ..</b>	\$3.25@3.50

## Sieves and Sifters—

Hunter's Imitation .....

<b>Hunter's Genuine .....</b>	gro. \$9.50@10.00
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<b>Buffalo Metallic Blue, R. M. Co., # gr. 14&amp;16 ..</b>	15&1
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Hindostan No. 1, R'g'lar. 10 lb 8¢ Hindostan No. 1, Small. 10 lb 10¢ Axe Stones (all kinds) 10 lb 10¢ Turkey Oil Stones, Extra 10 lb 10¢ 8 in. 10 lb 10¢ Queer Creek Stones, 4 to 8 in. 20¢ Queer Creek Slips. 40¢ Sand Stone. 6¢	Keuffel & Esser Co.: Favorite, Ass Skin. 40¢@10¢50¢ Favorite, Duck and Leather. 25¢@25¢10¢ Metallic and Steel, lower list, 35¢ 35¢5¢; Pocket, 35¢@35¢5¢ Lufkin's: Asses' Skin. 40¢@10¢50¢ Metallic. 30¢@30¢5¢ Patent Bend, Leather. 25¢@25¢10¢ Pocket. 40¢@40¢5¢ Steel. 33¢@35¢	Parallel— Athol Machine Co.: Simpson's Adjustable. 40¢ Standard. 40¢ Amateur. 25¢ Columbian Haw. Co. 40¢ Emmert Universal: Pattern Makers' No. 1, \$15.00; No. 2, \$12.50. Machinist and Tool Makers' No. 1A, \$12.50; No. 5A, \$7.00; No. 6A, \$10.00; No. 10A, \$22.50. Presto Quick Acting. 25¢@25¢5¢ Tiger Machinists. 40¢ Fisher & Norris Double Screw. 15¢@10¢ Hollands: Machinists'. 40¢@40¢5¢ Keystone. 65¢@5¢70¢ Lewis Tool Co.: Adjustable Jaw. 30¢ Monarch, 50%; Solid Jaw. 50¢ Massey Vise Co.: Clincher. 40¢ Perfect, 20%; Lightning Grip. 20¢ Merrill's. 20¢ Miller Falls. 60¢@10¢ Parker's: Victor, 20¢@25¢; Regulars. 20¢@25¢ Vulcan's. 40¢@45¢ Combination Pipe. 55¢@60¢ Sneedler's X. L. 33¢ Stephens'. 33¢	In lots less than one keg add 1/4¢ per lb.; 5-lb. boxes add 1/4¢ to list. <b>Cast Washers—</b> Over 1/4 inch, barrel lots. . . . . per lb. 1¢@2¢ <b>Weather Strip—</b> <b>Flexible Felt—</b> Lined, per 100 ft. \$2; \$3; \$4. 40¢@10¢ Moore's Unlined, per 100 ft. \$2; \$3; \$4. 50¢@10¢ <b>Wedges—</b> Oil Finish. . . . . lb. 2.70@2.80¢ <b>Weights—Hitching—</b> Covert Mfg. Co. . . . . 40¢ <b>Sash—</b> Per ton, f.o.b. factory: Eastern District. . . . . \$27.50@28.00 Southern Territory. \$20.00@23.00 Western and Central Districts. . . . . \$23.00@25.00 <b>Wheels, Well—</b> 8-in. \$1.55; 10-in. \$2.00; 12-in. \$2.50; 14-in. \$4.00. <b>Wire and Wire Goods—</b> <b>Bright and Annealed:</b> 6 to 9. . . . . 80¢ 10 to 18. . . . . 80¢@24¢ 19 to 26. . . . . 80¢@74¢ 27 to 36. . . . . 80¢@24¢ <b>Galvanized:</b> 6 to 9. . . . . 75¢@5¢ 10 to 14. . . . . 75¢@74¢ 15 to 16. . . . . 72¢@10¢24¢ 19 to 26. . . . . 75¢ 27 to 36. . . . . 72¢ <b>Coppered:</b> 6 to 9. . . . . 75¢@5¢ 10 to 14. . . . . 75¢@74¢ 15 to 18. . . . . 72¢@10¢24¢ 19 to 20. . . . . 75¢@10¢5¢ 27 to 36. . . . . 75¢ <b>Tinned:</b> 6 to 14. . . . . 75¢@10¢24¢ 15 to 18. . . . . 75¢@74¢ Annealed, Steel and Tinned, on Spools. 70¢@10¢10¢@70¢@10¢10¢ Brass and Copper on Spools. 60¢@5¢@60¢@10¢5¢ Brass, list Feb. 26, '96. . . . . 15¢ Copper, list Feb. 26, '96. . . . . 25¢ Cast Steel Wire. . . . . 50¢ Wire Clothes Line, see Lines. Wire Picture Cord, see Cord. <b>Bright Wire Goods—</b> List June 24 '03. . . . . 90¢@20¢90¢@5¢ Brass Cup Hooks and Brass Screw Hooks. . . . . 85¢— <b>Wire Cloth and Netting—</b> Galvanized Wire Netting. . . . . 80¢@5¢@80¢@10¢ Painted Screen Cloth, 100 ft. \$1.00@1.10 <b>Standard Galv. Hardware Grade:</b> Nos. 2, 2 1/2 & 3 Mesh, sq. ft. 3¢ Nos. 4 and 5 Mesh, sq. ft. 3 1/4¢ No. 6 Mesh, sq. ft. 3 1/2¢ No. 8 Mesh, sq. ft. 3 3/4¢ <b>Wire, Barb—See Trade Report</b> <b>Wrenches—</b> Agricultural. . . . . 75¢@10¢5¢@80¢ Alligator or Crocodile. 70¢@10¢75¢ Barter Pattern S Wrenches. 70¢@5¢@70¢@10¢ Drop Forged S. . . . . 45¢@45¢5¢ Acme. . . . . 60¢@10¢ Alligator Pattern, 70¢; Bull Dog. 70¢ Bemis & Call's: Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%. Bemis Pipe. . . . . 60¢ Combination Black. . . . . 40¢@5¢ Merrick Pattern. . . . . 50¢ Boardman's. . . . . 40¢ Coes' Genuine Knife Hd. 40¢@10¢5¢ Coes' Genuine Steel Hd. 40¢@10¢5¢ Coes' Genuine Key Model. 40¢@10¢5¢ Coes' Genuine Hammer Handle. 40¢@10¢5¢ Coes' "Mechanics" . . . . . 40¢@10¢5¢ Donohue's Engineer. . . . . 40¢@10¢ Eagle. . . . . 50¢@10¢ Elgin Wrenches, 10 doz. \$6.25 Elgin Retreading Attachment, one die, 10 doz. \$6.25 Elgin Extra Dies, 10 doz. \$3.00 Elgin Extra Jaws, 10 doz. \$1.75 Elgin Monkey Wrench Pipe Jaws, 10 doz. \$2.10 Gem Pocket. . . . . 30¢ Hercules. . . . . 70¢ W & B Machinist: Case lots. . . . . 50¢@5¢ Less than case lots. . . . . 50¢ W & B Railroad Special: Case lots. . . . . 50¢ Less than case lots. . . . . 40¢@10¢5¢ Solid Handles, P. S. & W. 50¢@5¢ Stinson. . . . . 60¢ Vulcan Chain. . . . . 50¢ <b>Fruit Jar—</b> Triumph Fruit Jar Wrench, 5 gross lots, 10 doz. \$7.50; 10 doz. \$8.00 <b>Wringers—</b> Tuttle Roller Press Mop Pall Wringer, each, \$8.00; 10 doz. \$18.00 <b>Wrought Goods—</b> Staples, Hooks, &c., list March 17, '98. . . . . 90¢@90¢10¢ <b>Yokes, Ox, and Ox Bows—</b> Fort Madison's Farmers' & Freighters. . . . . list net <b>Zinc—</b> Sheet. . . . . per 100 lbs. \$8.15@8.40
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For the Table of "Current Metal Prices" see the First Issue of Every Month.